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DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)

and THE DOW CHEMICAL COMPANY (Dow)

Midland/Saginaw/Bay City

TRI-CITIES DIOXIN COMMUNITY MEETING

November 9, 2005

Horizons Conference Center, 6200 State St., Saginaw

6:30 p.m. - 9:00 p.m.

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2               MR. NELSON (FACILITATOR): I want to welcome  
3   you tonight to the quarterly community meeting. This  
4   is a result of your public input. This is what you  
5   said you wanted to see, so the parties have responded.  
6   We will be meeting quarterly in this kind of fashion.

7           I want to call your attention to the ground rules  
8   on the agenda. If you've had a chance to look at  
9   those, that would be great. If you haven't, let's  
10   talk about them very briefly. We will do our utmost  
11   to start and stop on time. Staff from Dow and the DEQ  
12   will be available prior to each community meeting and  
13   after each community meeting for a half an hour.

14          We need to have you work very closely with us  
15   when it is time for folks from the community to ask  
16   questions, make statements, other things, to allow one  
17   person to speak at a time, to show respect to  
18   everybody. All of us are important community members  
19   here. This is being taped for Community Access  
20   Television, so it's very important that when you speak  
21   that you use a microphone so your words are heard.  
22   So, please, take the time to get up and come to the  
23   mic. If you're unable to rise, you need some  
24   assistance, we will do our best to pass you a mic,  
25   but we'd really like to try to use the microphones

1 we've got set up, because we want to make sure that  
2 tonight's proceedings are available to folks across  
3 the community.

4 A couple other things here. We are doing our  
5 utmost at these meetings to have them transparent and  
6 open, so feel free to ask good questions. Now we have  
7 a court reporter, so there will be transcripts. These  
8 are available on DEQ's website and they'll be  
9 posted as soon as we've had the chance to go through a  
10 review, get them up and running. Natalie works  
11 diligently to do that. It is important that you again  
12 speak clearly so she hears your words, too. She does  
13 her best, but you need to speak clearly when you use  
14 the mics. That helps us do a good job.

15 So finally, I'll get to the agenda here. My name  
16 is Chuck Nelson. I'm the Facilitator for tonight's  
17 meeting. In my day job, I work at Michigan State  
18 University in the Department of Community Agriculture,  
19 Recreation and Resource Studies. It's a big mouthful.  
20 We just say CARRS. I'm happy to be with you here  
21 tonight.

22 I want you to note that the agenda is very full  
23 tonight. We are going to ask you at the end of  
24 the meeting, did we put too much in this agenda or is  
25 this the level that we need to move ahead with, and

1     you'll tell us. We are going to have a situation  
2     where after the DEQ's updates you'll have a brief  
3     chance for question and answer. After Dow's updates,  
4     you'll have a brief chance for question and answer,  
5     and then after our additional presentations, you'll  
6     have a brief chance for question and answer. Then we  
7     have a half hour set aside at the end for questions,  
8     answers, comments, et cetera, and we'll also ask you  
9     about future agenda items for the next meeting,  
10    what are key things we need to be getting back to you  
11    about. So, please, take your opportunities to think  
12    about those things as we move along.

13       First up on the agenda then will be Jim Sygo  
14    talking about the ongoing community involvement process.  
15    I would also like Jim representing the DEQ to talk  
16    about who his staff members are here, and then John  
17    Musser representing Dow to do the same thing. So at  
18    the end of the meeting when you want to chat with  
19    somebody, you need to know who's available for you to  
20    talk to. So, Jim.

21       MR. SYGO: Thank you, Chuck. If I could  
22    have the Department of Environmental Quality staff  
23    stand for a minute, I'd like to introduce them. In  
24    the front row and presenting tonight, we have Art  
25    Ostaszewski; George Bruchmann who's with Waste and

1 Hazardous Materials Division; Al Taylor. In the back  
2 of the room, we have Cheryl Howe who was at the front  
3 desk; Deborah MacKenzie Taylor, a toxicologist; Bob  
4 McCann who is in our communications officer.

5 We also have from the District today Allen Brouillet  
6 and Brenda Brouillet who's the District Supervisor for  
7 Remediation and Redevelopment Division. We have Sue  
8 Kaelber-Matlock who's a geologist with RRD, as well as  
9 Andrew Hogarth.

10 MR. MUSSER: If I could have the Dow folks  
11 stand up just real quick here, I'm going to do this a  
12 little bit differently. I'd like to start with Susan  
13 Carrington. I think you've all met Susan once before  
14 at least. Susan is our Vice-President in charge of  
15 managing this issue on Dow's behalf.

16 Others, could I have you just stand up, and I'd  
17 like to start with you, Lauri, and just give a little bit of who  
18 you are and what organizations you're with.

19 MS. GORTON: My name is Lauri Gorton. I'm  
20 a civil engineer with CH2M Hill, and we're preparing  
21 the RI Work Plans on behalf of Dow.

22 MR. BUDINSKY: I am Bob Budinsky. I'm Dow's  
23 toxicologist working on dioxin issues.

24 MR. ROWLANDS: I'm Craig Rowlands and I'm also a  
25

1 toxicologist with Dow Chemical.

2 MS. Denney: Priscilla Denney working with  
3 Dow Chemical.

4 MR. HEIMBUCH: Joe Heimbuch with demaximis, inc. on  
5 behalf of Dow as a Project Manager.

6 MR. MUSSER: Hiding in the back of the room  
7 is Garret Geer. Garret is our Community Relations  
8 Manager; and also Harold Nicoll who manages our  
9 Employee Communications; last but not least, Ben  
10 Baker. Ben is a senior project leader and he is leading our Remedial  
11 Investigation and all of the project work in terms of meeting the  
12 requirements of our license.

13 MR. NELSON: Thank you, John and Jim. Jim,  
14 will you talk about ongoing community involvement now.

15 MR. SYGO: I wanted to introduce also three  
16 other people. We also have Lisa Williams who will be  
17 making a presentation a little bit later. Lisa is  
18 with the U.S. Fish and Wildlife Service, and we also have a  
19 couple of people from EPA with us. Greg Rudloff and  
20 John Steketee. Greg is the Project Manager assigned to Dow,  
21 and John is with the Office of Regional Counsel, and we also  
22 have with us Michigan Department of Community Health's  
23 Brendan Boyle.

24 Well, thank you everybody for coming tonight.  
25 Since last January when the Framework was initially

1 announced between Dow and DEQ, as many as of you know,  
2 we've been going through a process of rolling that  
3 Framework out to try to gain some level of evaluation  
4 of the type of public participation and community  
5 involvement that we should have relative to this  
6 particular process.

7 One of the items that we have been mentioning in  
8 the meetings that we've conducted for the past several  
9 months basically, we had meetings -- convening  
10 meetings in both March and April with an initial group  
11 to try to look at how to evaluate public participation,  
12 then at town hall meetings again in July and August.  
13 I think what we've been saying in all these  
14 meetings is that we're going to be going through a  
15 long-term effort to resolve a number of difficult  
16 challenges that have been caused by elevated dioxins and furans  
17 in the environment and this will be a long on-going process.  
18  
19 Our efforts are really to provide people with  
20 opportunities for meaningful input into the decisions,  
21 and we try to take all the information that we've  
22 assembled as a result of those earlier meetings and  
23 put them into a process for on-going community  
24 involvement.

25 I want to emphasize that both DEQ and Dow are

1 committed to reducing the potential exposure pathways  
2 that are associated with the contamination, while  
3 protecting public health, in a method that provides for  
4 the benefit of both the environment and the economy,  
5 and also, we want to make sure that we're actively and  
6 effectively involving the Tri-Cities communities and  
7 those interested in the future of the region.

8 The other thing I want to make sure everybody  
9 recognizes is that we did provide these announcements  
10 in the daily newspapers of the area. Ads were taken  
11 out at the beginning of October announcing the  
12 community involvement process that we would be using  
13 as a result of the meetings that we had, the town hall  
14 meetings, and what we ended up emphasizing in that  
15 document is we're going to be holding at least  
16 quarterly community meetings.

17 This is the first of those and we'll also have  
18 other meetings as they're necessary. The meetings  
19 have been announced in advance. So in 2006, the next  
20 meetings are scheduled for February 9th, May 10th,  
21 August 9th and November 9th. For this period of time,  
22 we're going to be holding these meetings at this  
23 location, the Horizons Conference Center in Saginaw.

24 As Chuck's already mentioned, transcripts will be  
25 provided for each meeting, and in addition to that, as



1 Chuck had noted, we're going to have neutral  
2 Facilitators for this particular series of meetings as  
3 well. And as we also mentioned and as most of you  
4 received or looked up on the web page already, we'll  
5 be establishing particular agendas for each meeting so  
6 that you have that documentation, and we'll try to get  
7 that documentation out as early as possible. It will  
8 also be available on the DEQ website. We're also  
9 trying to make an effort to make that information  
10 available to the papers as well and announcing these  
11 meetings in the paper well in advance of the meetings.

12 As part of each meeting, we'll also be providing  
13 opportunities for public comment on any and all issues  
14 that face this particular process. In addition, the  
15 ongoing community involvement will likely involve  
16 additional information sheets. Some of those were out  
17 on the table today. Those will be an on-going process.

18 We will continue to try to outline both the DEQ's and  
19 Dow's positions where we agree, and we'll also try to  
20 make sure we identify where we disagree on issues, and  
21 we'll also be available for other group meetings that  
22 are of a professional nature, civic or educational, or  
23 different types of organizations within the community  
24 to assist them in understanding the issues.

25 In summary, the community involvement process

1 goals are really to try to increase the number of  
2 people participating in this process, make the  
3 meetings more inviting, if at all possible, for people  
4 to attend, and to make sure that we're getting  
5 different viewpoints from other people in the  
6 community as well. We need to recognize and organize  
7 the meetings in a way that it's a fair and effective  
8 way to encourage the sharing of perspectives. Not all  
9 of us are going to agree on issues at all times, but  
10 we want to make sure that all those issues are  
11 identified appropriately.

12 I think the thing we've come to recognize is that  
13 this community involvement process may  
14 certainly evolve over time, and I think we're going to  
15 have to continue to play that out as this process  
16 proceeds and we get more information regarding this  
17 particular corrective action process. Both DEQ and  
18 Dow are open to continuing comments and how to improve  
19 community involvement. Periodically, I get those as I  
20 attend meetings, and we'll try to take those comments  
21 to heart and make sure that we're incorporating them  
22 into our community involvement process.

23 I'll turn this over to George Bruchmann now.

24 MR. BRUCHMANN: Thank you Jim, and good  
25 evening everyone. As Jim indicated, I'm the Chief of

1 the Waste and Hazardous Materials Division within the  
2 Department of Environmental Quality. Your agenda  
3 includes at this point this stack of items or segment  
4 of items that we're going to be doing sort of a tag  
5 team approach on.

6 I'm going to be quickly going through the first  
7 one on timeline, and then Al Taylor and Art  
8 Ostaszewski are going to take the next two items, and  
9 then I'll come back up and talk a little bit about  
10 Scopes of Work, or you may hear us refer to them as  
11 SOWs. For those of you that have been following this  
12 process along, I think some of these acronyms will  
13 sound familiar, and if not, I'll try to explain them  
14 as I go through and the same thing for staff, but at  
15 any point, when we get to the question period at the  
16 end of this segment, feel free to ask any questions  
17 about the material we've presented up to this point.

18 We inserted the timeline into the agenda to  
19 primarily answer that first question, how did we get  
20 here, and also to provide some description of the  
21 major dioxin studies and events that have gotten us  
22 here and also just a very general overview of what the  
23 major events are that really started, with the next  
24 slide, beginning around the late 70's, some of the  
25 dioxin advisories issued in the Tittabawassee and

1       Saginaw Rivers, and just skimming through these, as I  
2       go through these slides just for the purpose of  
3       expedition and time savings, since you've got these in  
4       front of you, I'm going to be pointing out just a few  
5       of the noteworthy items from our standpoint. So feel  
6       free as you look through and look at these if you've  
7       got any questions on any of the bullets that I'm not  
8       touching on, make note of those, and we'll try to  
9       answer questions on those.

10       On this particular slide, as I indicated, things  
11       started off in 1978, and about 10 years later, the EPA  
12       issued its risk assessment which instituted also the  
13       associated follow-up actions and identified the dioxin  
14       study follow-up requirements that were ultimately  
15       placed into the Federal Hazardous Waste Permit. At  
16       that point, we had not yet received authorization from  
17       EPA from a regulatory standpoint until this  
18       authorization came out of U.S. EPA. I wanted to  
19       highlight that 1988 event, because that document  
20       itself really forms the genesis of all corrective  
21       action activities that have flowed since that point in  
22       time. So that's a very noteworthy date back in 1988.

23       This slide as indicated, 1996, the middle bullet,  
24       identifies when we actually became an authorized State  
25       and we have the authority therefore under EPA and RCRA

1 to pursue corrective action responsibilities as they  
2 relate to the facility.

3 This slide, the primary noteworthy item is the  
4 second bullet related to the Dow conducted dioxin  
5 studies in follow-up to the 1996 DEQ investigation on-  
6 site. The reason I wanted to highlight that one is  
7 that the Corporate Center, which is identified there,  
8 was used as sort of a surrogate for the Midland area  
9 community, and their knowledge of some of the results  
10 of those studies during that two to three year period,  
11 both DEQ and Dow studies, we were able to find these  
12 three findings.

13 First one being that the perimeter of the site  
14 and certain haul routes showed elevated concentrations  
15 of dioxins and furans. The residential areas that  
16 were north and east of the Dow facility showed  
17 concentrations in excess of 90 parts per trillion,  
18 which is the State cleanup criterion, and levels  
19 higher closer to the Dow facility. Significantly  
20 elevated concentrations are present within the Dow  
21 facility boundary.

22 This slide identifies a few more of the studies  
23 that were done in the following three years, 2000 to  
24 2003, and I'm not going to say anything more about  
25 those. It's set to identify the results that came

1 from those, that family of studies, which concluded  
2 these five items. Sediments and floodplain soils  
3 contain elevated concentrations of dioxins and furans downstream  
4 of Dow. There are normal levels outside of repeatedly  
5 flooded areas and areas upstream of Dow. That was a  
6 significant finding. Also, soil concentrations were  
7 highest in the repeatedly flooded areas, in many cases  
8 exceeding 1,000 parts per trillion toxic equivalent.  
9 Concentrations decrease markedly at the floodplain  
10 boundary, and that concentrations were elevated in  
11 wild game, fish and other animals from the river and  
12 floodplain.

13 Again, additional activities that  
14 took place as a result of some of those earlier  
15 findings, including a petition that was filed to the  
16 Michigan Department of Community Health, that's MDCH,  
17 and the Agency for Toxic Substances and Disease  
18 Registry, a Federal agency, that's ATSDR. So you'll  
19 probably hear us refer to both of those at other  
20 points. Again, if questions arise concerning  
21 any of the public health assessments or consultations,  
22 Brendan Boyle from the DCH is willing to answer  
23 questions as they arise on those subjects.

24 The second bullet identifies back in March 2002  
25 the Tittabawassee River floodplain and Midland Soil

1     Dioxin Contamination Health Consultations. The key  
2     words there are "health consultations". If you hear us  
3     refer to those, that's what we're talking about there.  
4     Those were released for public comment at that point,  
5     and then the other noteworthy item or event in 2003  
6     was on June 12th we actually issued Dow's operating license under  
7     Part 111 of the State Natural Resources and Environmental  
8     Protection Act, and as indicated by that last dash  
9     mark, that license forms the fundamental corrective  
10    action document, the operative document by which  
11    corrective action is pursued by the Dow facility and  
12    off-site areas.

13       The next timeline slide here shows a few key  
14    activities during 2004. We're getting a lot closer to  
15    the present, so I thought these might be of some  
16    interest. The Tittabawassee River Floodplain and  
17    Midland Soil Dioxin Contamination Consultations were  
18    finalized by MDCH/ATSDR back in August, and elsewhere  
19    during 2004 and 2005, Dow conducted a number of  
20    studies on the Tittabawassee River and floodplain and  
21    the Saginaw River sediment, and those results are  
22    currently being reviewed by the Department of  
23    Environmental Quality. 2004 and 2005 MDEQ studies on  
24    the Saginaw and Shiawassee Rivers under a grant by the  
25    U.S. EPA GLNPO, which stands for the Great Lakes

1 National Program Office, and we expect to see those  
2 results by March of 2006.

3 January 20th, 2005, that also is a noteworthy  
4 item, and Jim is going to say a few things about the  
5 Framework and the context of the framework as it  
6 relates to the process we're in right now. Later on  
7 during the meeting, January 20th, that Framework also  
8 formulated a very basic document between Dow and DEQ  
9 that relates to the entire process as it unfolds  
10 before us, and April 2005, the Wild Game Health  
11 Consultation was finalized by MDCH/ATSDR, and  
12 July 2005, the Tittabawassee River Fish Health  
13 Consultation was finalized, and also during July, the  
14 Pilot Exposure Investigation, or PEI, Draft Health  
15 Consultation was released for public comment by  
16 MCDH/ATSDR.

17 In October, just last month, the Scopes of Work  
18 were approved for both Midland and the Tittabawassee  
19 River, and if you have been following this process,  
20 you may recall that in May of 2004, May 26th in fact,  
21 the last meeting of the Community Advisory Panel, we  
22 had before you drafts of Scopes of Work. Well, those  
23 finally were issued in accordance with the provisions  
24 of the license in October of 2005. Those are  
25 available for review on our website, and if you look,



1 I believe attached to the agenda, the community  
2 meeting ground rules includes an item 10, website  
3 citation there, that you can use to log on to our  
4 website and gain access to all the relevant documents  
5 that we're referring to here, including the Scopes of  
6 Work, or SOWs as we refer to them.

7 Just this month, Dow's submittals as part of the  
8 Midland Scope of Work approval process included under  
9 the Human Health Risk Assessment process supporting  
10 studies and work plans for determining Midland soil  
11 characteristics and screening for other potential  
12 contaminants of interest, or PCOI's as we call them,  
13 and we'll try to avoid using that acronym. Also, we  
14 received an updated Preliminary Conceptual Site Model,  
15 and both of those documents are under review right  
16 now, but they are posted on our website as of today,  
17 so feel free to access those if there's any interest  
18 in reviewing those.

19 At this point, I'd like to turn the mic over to  
20 Al and Art for the next two items.

21 MR. TAYLOR: We're going to switch over to a  
22 different computer here. This is going to be a little  
23 bit different for us. We're going to be using Google  
24 Earth to try to provide a high level overview of a lot  
25 of the data that's been collected previously. This is

1 intended to give an idea of the scale of the project  
2 and 50 some odd miles of watershed, and this is a good  
3 way to do it. This is different because this is  
4 actually streaming off of the web, so we're a little  
5 bit nervous about how this is going to work out.

6 The data that we're going to present right now is  
7 essentially agency data. There's a little bit of Dow  
8 data in here. There is other data available. It's  
9 still undergoing QA/QC and validation, and when that  
10 validation process is completed, we fully intend to  
11 incorporate that data into this presentation format.  
12 Dow has conducted a number of studies over the last  
13 couple of years. We're in the process of reviewing  
14 and validating that data and clearing up some QA/QC  
15 issues. The DEQ has a lot of data from GLNPO that's  
16 going to become available very shortly that we also  
17 plan to incorporate. So when this -- again,  
18 when this data becomes available -- we intend to add  
19 it.

20 The next couple of slides here, I believe it's  
21 slides up to number 27, those are just included in  
22 your handout. You're actually going to see these  
23 slides incorporated into the presentation, so don't  
24 try and make sense of them at this point. You'll see  
25 where they pop up in the presentation. Art's going to

1 speak about the sediment information, and I'm going to  
2 come back and talk a little bit about the floodplain  
3 soils.

4 MR. OSTASZEWSKI: As I mentioned, I'm Art  
5 Ostaszewski with the Waste and Hazardous Materials  
6 Division, Environmental Quality Analyst. I've been  
7 with the project approximately a year, and what our  
8 presentation from a data overview perspective is going  
9 to look at is a review of the collection methods, how  
10 does a number on the screen come from some of the  
11 sampling that we take. We're going to look at a new  
12 paradigm for data presentation, that's Google Earth,  
13 and the thing with Google Earth is we're going to look  
14 at some of the existing dioxin and furan data for  
15 sediments and soils, also take a look at some of the  
16 data we collected last year, that's not available yet,  
17 but why that's important and how we're going to be  
18 using it. We'll also conclude with what we think we  
19 know in terms of the current distribution of dioxins  
20 and furans in soils and sediments in the entire  
21 Saginaw watershed and their tributaries.

22 So here's a collection for soils. You see the  
23 boring taken right here. This is M-13 taken in 2004.  
24 We segment these, the intervals, according to their  
25 length. This is zero to one inches, one to three,

1 three to six, and six to twelve -- or twelve to  
2 fifteen I should say. We put them in aluminum pans,  
3 put them in these jars as outlined here. From a  
4 sediment collection method, this is us out on the  
5 river on the RV Mud Puppy. Here there's a Lexan tube,  
6 four inch diameter Lexan tube, which we put into the  
7 sediments, and using a vibracore, we penetrate as  
8 deep as we can and then bring that out.

9 Another method that we utilize where we don't get  
10 a penetration is a Ponar, and that's basically the  
11 bucket that you see here, and those sediments, whether  
12 they're superficial or whatnot or are coring I should  
13 say, are deposited in stainless steel bowls, mixed,  
14 and taken out of this -- and put into jars, and out of that,  
15 we send it to the lab and we get our data back.

16 Historically, what you've seen as far as data  
17 representation has been two-dimensional. This is some  
18 of the historic Tittabawassee River sampling data. I  
19 believe we have some of these in the back room. That  
20 was the Tittabawassee. Here's our historic Saginaw  
21 River. This includes -- primarily, this is all agency  
22 data, including MDEQ, Army Corps of Engineers and EPA,  
23 and historic here, I mean prior to 2004.

24 Now I'm going to toggle to Google Earth. We're  
25 zooming in on the Great Lakes watershed, the State of

1 Michigan. What you see from a banding perspective,  
2 Google Earth is a freely available mapping software  
3 available from Google. The bands here are high  
4 resolution where it's available. All of southeast  
5 Michigan is available, Indiana, the slough between  
6 Kalamazoo and Grand Rapids, and we have some in the  
7 Saginaw and Tittabawassee watershed, which we'll zoom  
8 in on.

9 And at this point, I'll put a layer on the  
10 two-dimensional data that we showed previously. Those  
11 were from ArcView files. This is Midland right here.  
12 These are Dow treatment ponds. This is Consumers  
13 Energy cooling pond. The Tittabawassee River snakes  
14 through here. We're going to zoom in and get a lot  
15 better feel for the representation of data. The  
16 Shiawassee comes through here to form at the  
17 confluence at Green Point -- the Saginaw River -- which  
18 then extends through Saginaw, through Bay City here  
19 and out into the Bay.

20 So what we've been able to do with Google Earth  
21 is to plot this environmental data and get a feel for  
22 a macro scale watershed view. I should point out here  
23 that the data that you're seeing are individual  
24 values, dioxin concentrations, dioxin and furans in parts  
25 per trillion TEQ, and the accuracy of the locations is

1 dependent upon when the data was collected, what type  
2 of GPS they used. So we used Google Earth as an  
3 overview, not -- it's not for specific design work or  
4 remedial scale. It's more for an overview of  
5 watersheds and things happening on the watershed  
6 level.

7 So here we are coming around looking at Saginaw  
8 Bay, and we're going to zoom in specifically on the  
9 Saginaw River, and we're going to work our way up. I  
10 should tell you from a scale perspective, the green is  
11 0 to 90. This is in parts per trillion TEQ. The  
12 yellow is 90 to 1000. Red is over 1000. These are  
13 not remedial endpoints. The 90 parts per trillion is the  
14 Part 201 direct soil contact soil number,  
15 and 1,000 parts per trillion is the ATSDR action  
16 level above which exposure controls are recommended.  
17 These levels are not predictive of equal risks or fish  
18 consumption or wildlife uptake, along those lines.

19 So at this point, we're going to take a little  
20 fly up the Saginaw River. Bay City in this portion  
21 comes around to Midland. From a Saginaw River  
22 perspective, it's sometimes difficult to see the low  
23 values with the color scheme that we're using, but  
24 they are there. From the Saginaw River perspective,  
25 the lowest concentration, we have some that are zero

1 or very low in the single digits here around Midland.  
2 The largest concentrations that we have are 8,200 [parts per trillion]  
3 and those are from the Army Corps of Engineers that were  
4 collected in 2004.

5 I do want to turn on an additional layer here,  
6 turn on lines, the river mile lines that the Army  
7 Corps of Engineers uses, and I also want to turn on at  
8 this point the proposed DMDF dredge material facility.  
9 As you can see, from a characterization perspective,  
10 we're dealing with what may look like a lot of data.  
11 There's plenty of areas where -- here's river mile  
12 seven to river mile eight. This is -- we only have  
13 four sediment samples for an entire river mile. So  
14 there is the need for additional characterization, and  
15 we've tried to approach that, tried to deal with that  
16 in some of our 2004 data, which I'll show.

17 This is the proposed DMDF location, according to  
18 the Army Corps of Engineers. What you see here is the  
19 Zilwaukee Bridge. I'm entering the City of Saginaw.  
20 The values are to the height. The red values are  
21 capped at a maximum of 5,000 meters, even though we  
22 have some values that are above that. We're going to  
23 loop around and look at the Tittabawassee River,  
24 specifically the confluence area, and one thing I want  
25 to show from our existing sediment data is that we

1 have some fairly low concentrations. You can see the  
2 distribution here. This is the Shiawassee coming in.  
3 There's a corner here for the Flint, and this is the  
4 Cass. These data points are on the Cass River. That  
5 from a Shiawassee River, Cass River perspective, the  
6 dioxin and furan concentrations are very low,  
7 basically approaching background.

8 We're again going to take a hop up the  
9 Tittabawassee River to the area where it's mapped in  
10 high resolution. Again, this is contaminated sediment  
11 data. We'll work our way down with floodplain soils,  
12 and then we'll close with representation of all the  
13 historic data. This is agency data, again either  
14 MDEQ, U.S. EPA or Army Corps of Engineers. Again, you  
15 can see that we're sometimes dealing with areas that  
16 are data shy or that there is the need for additional  
17 characterization in some of these stretches to kind of  
18 get a feel for what's going on in the river system.

19 We're going to work our way up to the Caldwell  
20 Boat Launch, again kind of zooming in on some of the  
21 low concentrations, get a better idea where those are.  
22 What you can tell from the Tittabawassee River is that  
23 we had variable contamination in the sediments. In  
24 some areas, we had been very high and then some areas  
25 are virtually nondetectable or at background levels.



1       At this time we're going to fly up and take a  
2       look at the sediment samples around the facility  
3       itself, and as you can -- it's very difficult to see --  
4       but we have some greens up in this area, so I want to  
5       make a point of showing where some of these low  
6       concentrations are, and this is one of the limitations  
7       of Google Earth when you represent data in this  
8       fashion is that you need to zoom in on areas where  
9       that -- where you don't have the high bars. So here  
10      we are looking -- this is the upstream of the  
11      Tittabawassee River. We're going to zoom in on the  
12      Chippewa and the Pine Rivers here shortly. This is the Dow  
13      facility. This is their tertiary treatment ponds. This is the  
14      cooling pond. This is Midland up here. This is  
15      looking down the Tittabawassee River at our historic  
16      sediment contamination, sediment values for dioxins  
17      and furans and looping around, and this is the  
18      Saginaw.

19      Again, to emphasize what's happening from an  
20      upstream perspective, we see that the concentrations  
21      of the tributaries and also of the Tittabawassee  
22      upstream, the concentrations are very low. Here we  
23      have single digits along the Chippewa and the Pine Rivers  
24      before they merge together. We're going to loop  
25      around and come down to -- after they come together

1 down through the -- at the Dow facility, just  
2 downstream of the Dow dam. Again, we have some historic  
3 sediment concentrations that are again very low.

4 At this time, I'm going to turn on the soils data  
5 that we have and then come back up to a facility  
6 perspective. From a maximum and a minimum  
7 concentration, from a soils perspective, our minimum  
8 concentration is tucked up in this area at less than  
9 one part per trillion and our maximum  
10 concentration is back I believe on the plant site. It's -- I think  
11 it's one of these bars here. It's 15,000 ppt.

12 They're roughly -- they're less than a mile apart, and  
13 they're both collected from the same 1998 Dow property  
14 study where MDEQ took split soil samples from.

15 Before I turn over to Al, and we're going to head  
16 down the Tittabawassee, I want to show you how we  
17 developed some of our floodplain mapping. That's  
18 going to come into play soon here in our discussions.

19 Basically, we took some of the aerial photos that  
20 showed both the 100 year floodplain line, which is  
21 this purple line here, and the blue line is the 7 to  
22 10 year floodplain line. What we were able to do is  
23 digitize that onto Google Earth and then we build  
24 little walls to kind of give you an idea of the  
25 floodplain, and as we come down, you'll see how those

1       come into play. At this point, we'll go back up to  
2       the Dow facility view.

3               MR. TAYLOR: I just wanted to cover a couple  
4       of things on the soil data that we've got real quick,  
5       if we can stop here for a moment. One of the things  
6       that we need to communicate here is that we have  
7       actually two different -- at least two different --  
8       mechanisms by which dioxin and furans appear to have left the  
9       Dow facility. This is kind of the facility boundary  
10      up here. This is kind of northeast in the predominant  
11      downwind direction, and what we're seeing in this area  
12      here is well out of the floodplain.

13             We believe this dioxin is related to airborne  
14      deposition. Down in the floodplain, we believe  
15      it's -- this is the northeast corner essentially of  
16      the Dow facility. This is Saginaw Road here. This is  
17      Bay City Road over here. Northeast of the facility,  
18      we have airborne deposition of dioxins and furans.  
19      Concentrations in Midland typically are quite a bit  
20      lower than what we've been seeing down in the  
21      floodplain.

22             Over here along the river, we have a different  
23      release mechanism. Dioxins and furans have gotten into the river  
24      and have been deposited up in the floodplains through  
25      repeated flooding events, and what we're going to do

1 is take a walk downriver and look at a couple of  
2 different areas.

3 The color scheme that we're looking at here,  
4 these are again soil data -- floodplain soil data as  
5 we move away from the City of Midland. Again, red is  
6 greater than 1000. The yellow is between 90 and 1000,  
7 and the green is less than 90, and what I want to show  
8 you here is a couple of transects. The DEQ  
9 Remediation and Redevelopment Division collected a  
10 number of sets of soil data from the floodplain where  
11 sampling started at the river and then moved up out of  
12 the floodplain, moved up away from the river, up an  
13 elevation, and what we have typically seen through  
14 those -- we're going to go over to Imerman Park, and  
15 what we've seen there is concentrations are typically  
16 high closer to the river and decrease as we move up  
17 out of the floodplain.

18 This is Imerman Park down in Saginaw Township  
19 right here, and here's a good example. We have a lot  
20 of big red large [values] right here close to the river. They  
21 start to decrease a little bit as we move away from  
22 the river, and when you get up here to the 7 to 10  
23 year floodplain line and this 100 year floodplain  
24 line, they decrease off and you get the shorter yellow  
25 and get into the greens, and this is a pattern that

1 we've seen very consistently throughout the watershed,  
2 and it really forms the basis for the determination of  
3 the Priority 1 facilities that are receiving Interim  
4 Response Activities this year.

5 What we're going to do is we're going to go back  
6 to the old school stuff, which is air photos with data  
7 on it, which I'm a little bit more comfortable with,  
8 and just to give you another representation again, the  
9 blue line here is the 7 to 10 year floodplain line.  
10 The 100 year floodplain line is actually not shown  
11 here. It's further off into this corn field in that  
12 direction, but typically, near the river, we have our  
13 higher concentrations. Again, red is greater than  
14 1000, yellow between 90 and 1000, and green less than  
15 90. So we see as we move up out of the floodplain,  
16 get higher in elevation, get out of those repeatedly  
17 flooded areas, concentrations drop off, typically on  
18 the other side of the 7 to 10 year floodplain line.

19 Another example, this is actually down near West  
20 Michigan Park, another transect close to the river,  
21 fairly high, 1100, 850 and 94, and then just on the  
22 other side of this line actually we get into the less  
23 than 90 concentrations. This is data that was  
24 collected over at West Michigan Park showing  
25 essentially the same thing. The flooding pattern

1 here, this kind of -- the way this blue line -- 7 to  
2 10 year floodplain line moves around is it was flooded  
3 over here and it was also flooded over here but it was  
4 high in here. This was higher ground. This is an  
5 example of -- here's that 7 to 10 year line right  
6 here, and this is a high bank on the river, and this  
7 is actually Shields Elementary School, and what we  
8 found is, you know, up here on a high bank, high in  
9 elevation, we have low concentrations, 3.8, 3.2, 2.7.  
10 Down here on the low bank side, 1500. Again, a very  
11 consistent pattern. Once you get above this line, you  
12 see typically concentrations starting to drop off, at  
13 least from the river deposited type of sediments.

14 Next slide, please. This is some of the data  
15 that both DEQ and Dow have collected. This is from  
16 Dow's Scoping Study from Imerman Park. I think it's  
17 called Scoping Study Area 2. I know you're not  
18 going to see all these numbers out here, but  
19 hopefully, you can see the red, the green and the  
20 yellow in here, and what this shows is, again, here's  
21 the river. Imerman Park is over in here, and as you  
22 move away from the river, concentrations tend to  
23 decrease. The reds -- we got quite a bit of red in  
24 here, go to yellow, and once we get up to this 7 to 10  
25 year line and the 100 year line up here, you see them

1 starting to drop off below 90 parts per trillion, and  
2 you know, this -- the Dow data basically is supporting  
3 the working hypothesis that we've had for how the  
4 dioxins and furans are distributed  
5 in the floodplain.

6 An important factor here though that we need to  
7 understand is that it doesn't account for everything.  
8 It's not as conservative as one would think. There's  
9 a 1600 right here, on the other side of both the 7 to  
10 10 and the 100 year floodplain line, and that 1600  
11 is believed to be there because of movement, soil  
12 relocation out of the floodplain. So while we have a  
13 pretty good working model to explain where dioxins and  
14 furans are from river processes and flooding  
15 processes, we don't have the same kind of model to  
16 describe where people move soil around to. So that's  
17 something that we have to be careful about in this  
18 particular project.

19 Now you can see that 1600 out here, this red in  
20 this little sea of green, and as you can see, the  
21 green, you know, typically is on the other side of  
22 these floodplain lines. As we get further down the  
23 watershed and these lines typically get further apart,  
24 the 7 to 10 year line is further away from the 100  
25 year line as the land gets flatter. Upstream towards

1 Freeland and up closer to Midland, typically, those  
2 lines are pretty close together.

3 MR. OSTASZEWSKI: Back to Google Earth. One  
4 thing that we should also mention is that, as Al was  
5 saying, the floodplain lines here are very close, the  
6 7 to 10 and 100 year floodplain, we'll see as we  
7 traverse down -- I mean downstream from Imerman Park  
8 as the -- as the land gets flatter, the floodplain  
9 lines will open up to a much greater area. You can  
10 see that happening here as we're coming down to Green  
11 Point. So basically, this whole confluence area is in  
12 the 7 to 10 year floodplain.

13 At this point, I'd like to talk about some of the  
14 data that MDEQ collected in 2004, some of the  
15 additional data that will help us identify whether the  
16 Shiawassee River is a contributing factor of dioxins  
17 and furans and also identify the distribution of  
18 in the Saginaw River. I'll show you where those  
19 data points are. Looking up the Shiawassee River,  
20 these are some of the additional data points or  
21 additional characterization that we will have in March  
22 of 2006.

23 As you remember, previously, we had about nine  
24 samples between the data -- the agency data collected  
25 so far to date. We have I believe about 35 stations



1 all ranging up from Howell down to through the  
2 Shiawassee Game Area, and I'm going to zoom out and  
3 we'll take a look at the Saginaw and the sample  
4 distribution there. We have about 75 additional  
5 stations on the Saginaw to kind of patch up where --  
6 between the river mile lines to get some additional  
7 both floodplain and soil data. I'm going to zoom back  
8 out from a Bay perspective and give you an idea that  
9 we have some additional samples out in the Bay all the  
10 way from Fishpoint Wildlife Area, looking around the  
11 east side, to the Bay City State Park and also out in  
12 front of the Bay City water intake, and these data were  
13 collected as part of MDEQ's Great Lakes National  
14 Program Office grant and also our commitment to Dow's  
15 operating license.

16 So some of our conclusions that we can make is  
17 that upstream concentrations of dioxins and furans  
18 basically approach background. This is from the view  
19 of the Tittabawassee looking upstream, up towards  
20 Midland. This is looking downstream. Upstream  
21 concentrations above Midland itself on both the  
22 Tittabawassee, the Chippewa and the Pine approach  
23 background, little green dots. As Al mentioned,  
24 dioxin and furan concentrations decrease primarily  
25 with elevation out of the floodplain, and this is if

1 it's left undisturbed.

2 One thing that I'd like to mention is that what  
3 we've seen from a distribution in the Saginaw River,  
4 based on primarily the Army Corps of Engineers data  
5 from 2004, is that we're seeing some pretty elevated  
6 concentrations above Zilwaukee. We see a prevalence  
7 of these red bars, over 1000 ppt, but we haven't seen  
8 those in the lower part of the Saginaw River. This is  
9 a watershed view of both the Tittabawassee and the  
10 Saginaw and our soil -- existing agency soil and  
11 sediment data.

12 Again, to conclude, upstream concentrations  
13 basically approach background. Dioxin and furan concentrations  
14 decrease with elevation out of the floodplain if left  
15 undisturbed. Sediment concentrations are greatest in  
16 the upper portion of the Saginaw River, and we think  
17 Google Earth is a useful tool for demonstration of  
18 environmental data on a large scale.

19 MR. TAYLOR: What we're going to do right  
20 now is switch back to a different projector, talk very  
21 briefly about advisory signage that's been placed on  
22 the watershed, move on to the Scopes of Work and then  
23 move on with the other presentations for the evening.  
24 We've got -- we are running a little bit behind  
25 schedule, so we're going to try to get everything done

1 here in about five minutes.

2 Our advisory signage, these signs are part of the  
3 Communications IRA, or Interim Response Activities, Work  
4 Plan. This sign language, the language on these  
5 advisory signs -- advisory signs are basically signs  
6 that are going up in the Tittabawassee River watershed  
7 and along the Saginaw River to advise people of the  
8 State fish advisory and also of contaminated soils and  
9 sediments. There's also a sign advising people of the  
10 wild game advisory -- actually, the wild game  
11 consumption advisory.

12 The language was developed in close coordination  
13 with MDCH and local communities. Right now, we're in  
14 the process of posting signs at parks and other high  
15 use areas along the Tittabawassee River. The  
16 Tittabawassee River is mostly done as of today. We've  
17 got a few more places to hit. We are also going to be  
18 placing signs along the Saginaw River -- the fish  
19 advisory signs along the Saginaw River -- yet this year.  
20 We do not have the data yet to make a decision as to  
21 whether or not soil advisory signs need to be placed.

22 Again, soil and fish advisory signs for the  
23 Tittabawassee. At this time only fish signs for the  
24 Saginaw. Wild game advisory signs are also being  
25 placed at the Shiawassee National Wildlife Refuge in

1 cooperation with the good folks over there. We have  
2 some of the signs on display on the back table  
3 tonight, and we'd also like to thank the local  
4 municipalities for their continuing assistance with  
5 this project. This has been a quite challenging  
6 project to get kind of a consistent agreement on sign  
7 language over 50 miles of watershed.

8 These are some examples. This is West Michigan  
9 Park. Typically, what you'd see is kind of an entry  
10 sign which says, please use such and such park  
11 safely, that there's fish consumption, soil and river  
12 sediment contamination advisories in effect at this  
13 park, and that would be placed so that people entering  
14 the park could see it. That's about a two by three  
15 foot sign. Then in various areas in the park as  
16 appropriate, soil and fish signs are placed.

17 Signs have also been placed on -- this is  
18 actually adjacent to one of the bridges along the  
19 Tittabawassee River that people access for routine  
20 fishing. So we would find the path that people take  
21 down to their favorite fishing spot and put a sign  
22 next to it.

23 At this point, I'd like to move over to George  
24 Bruchmann again.

25 MR. BRUCHMANN: Thanks, Al, and as he already

1 pointed out, we're running just a little bit behind  
2 schedule, so I just want to quickly go through these  
3 slides to indicate, as I mentioned earlier, the  
4 revised Scopes of Work, or SOWs, were approved by the  
5 Department on the 18th. The outline -- what the SOWs  
6 do is provide an outline for the Remedial  
7 Investigation Work Plan. That's a major document  
8 that's coming up under the Framework, as I mentioned  
9 earlier, is due December 31st of this year, and you'll  
10 note that we have one of our meetings -- a quarterly  
11 meeting in February, and it's anticipated that as soon  
12 as we get that document we're going to post that, make  
13 it available to the public for comment, and we'll take  
14 those comments for further discussion at the February  
15 meeting.

16 And I want to again revisit for everyone in the  
17 audience that the Scopes of Work and our approval  
18 letter are located on the website identified right  
19 there, the second to last bullet, and in addition,  
20 tonight we've got a small number of copies we brought  
21 along for those that don't have access to the  
22 Internet, if you would like to take a look at that and  
23 take that with you.

24 As I indicated earlier, the features of the  
25 Scopes of Work contain schedules for the plans coming

1 up, the prioritizing investigation work, and it's  
2 essentially a high overview of what actually is going  
3 to be done in those risk assessments. As I mentioned  
4 earlier, there are other documents that have come in  
5 on November 1st, and those, too, are available on the  
6 website, as I indicated earlier, and we're welcoming  
7 comments on those as well, since we're still in the  
8 process of taking a look at those and considering  
9 those for approval.

10 With that, I'll turn it back over to Chuck for  
11 any questions on the segment we just finished, if  
12 there's any time.

13 MR. NELSON : Okay. Are there  
14 specific questions for the folks who just made the  
15 presentation from the DEQ?

16 AUDIENCE MEMBER: The sampling points, the  
17 sediment points along the rivers, are they likely to  
18 change due to natural occurrences, like storms and  
19 floods?

20 MR. TAYLOR: Yes.

21 MR. NELSON: Any other questions before we  
22 move on? Okay. Hearing none, John, you want to take  
23 the lead on the Dow updates.

24 MR. MUSSER: Thank you. Good evening  
25 everyone, and thank you for your participation this

1 evening. On my behalf, my colleagues and the company,  
2 we'd like to thank you sincerely  
3 for your participation. The reason for that is I  
4 think pretty critical to this process. We cannot  
5 achieve the objective that we have for this project  
6 without your involvement. If you recall, our  
7 objective is to develop a comprehensive solution that  
8 results in protection of human health and the  
9 environment and the well-being of the people, the  
10 citizens, living in the communities. So your  
11 participation ensures -- further ensures -- our  
12 opportunity to achieve that goal, and again, thank you  
13 very much for your participation, and I encourage you  
14 to continue to participate in these dialogues.

15 My role here this evening,  
16 I'll be back for a little bit more discussing the  
17 bioavailability study, but my first initiative here is  
18 to discuss with you quickly the Interim Response  
19 Activities, and this is an update from maybe what some  
20 of you heard the last time I spoke at one of these  
21 community meetings. You recall that the IRAs, or the  
22 Interim Response Actions, are required by DEQ.  
23 They're consistent with our operating license. Their  
24 intent is mainly to minimize any contact with soils  
25 that may exceed 1000 parts per trillion, which as you

1 may recall, is the action level standard for the  
2 ATSDR.

3 The ATSDR action level does suggest a number of  
4 different actions, and I'm happy to be able to report  
5 that a number of those actions that they suggest may  
6 be taken are, in fact, either completed or underway.  
7 In addition, these actions have been taking place in  
8 public or high use areas, both in the residential  
9 districts in the communities in Midland and along the  
10 Tittabawassee River.

11 There are so-called Priority 1 and Priority 2  
12 areas. The Priority 1 areas are comprised of about  
13 103 parcels that are near the Dow plant in  
14 Midland in three small neighborhoods, or sub-divisions  
15 I should say, and then along the Tittabawassee River,  
16 there are 351 parcels where flooding came within  
17 approximately 20 feet of a residence or there was some  
18 flooding in a structure close to the home or the home  
19 itself. This was the March '04 flood event.

20 The Priority 2 areas are those properties along  
21 the Tittabawassee River that flooded less extensively  
22 and where there wasn't any inundation of residences  
23 or outbuildings close to the home. In addition, the  
24 parks that we're referring to, these high use public  
25 areas, include Freeland Festival Park, Imerman and



1 West Michigan. The Interim Actions on the residential  
2 front that were approved actions by DEQ included the  
3 interior house cleaning activities of dusting, steam  
4 cleaning carpets, and cleaning furnace ducts. In  
5 addition, there was a replacement of furnace filters  
6 offered and installation of covering materials, that  
7 might be wood chips or it might be reseeding any areas  
8 of heavy use where we had exposed soils, and other  
9 reasonable measures which were agreed to by the  
10 residents, DEQ and Dow.

11 We've had a very high participation rate of  
12 80 percent in Midland and as well pretty close to that  
13 along the Tittabawassee River. There are a number of  
14 people comprising the additional 20 percent that  
15 simply did not respond despite repeated attempts to  
16 arrange a meeting and a discussion to advise them what  
17 services might be available to them in this Interim  
18 Action effort, and there were some people that simply  
19 declined the services. These were all voluntary  
20 services. No one was required to accept any of these  
21 services. So this is a high participation rate in sum  
22 total.

23 Just a few quick pictures to add to the  
24 entertainment value here to show you what some of the  
25 before and after transitions looked like. This is a

1 residence in the City of Midland. You'll see a lot of  
2 bare soils, gravel soils that are uncovered, and I  
3 just want you to look at the left side of the property  
4 there along the house. There's no landscaping per se  
5 in that area, and when we did the Interim Actions,  
6 there was an effort to raise an area, put in fresh top  
7 soil and make it available for landscaping, and you'll  
8 note that that area that was uncovered soils or  
9 exposed soils has now been covered with some type of  
10 pea gravel there.

11 Another shot, which is a fairly dramatic  
12 transition I think, where we had a lot of ground cover  
13 that didn't really cover all the soils, but it was a  
14 pretty rough area, and then after the fact, that was  
15 all cleaned out, and now we've reseeded that area  
16 entirely. So not only do you get the benefit of  
17 minimizing the potential for exposure, we also, I think,  
18 did quite a bit to improve the attractiveness of the  
19 property.

20 In the parks, there were activities -- not all  
21 these activities were undertaken in every park but  
22 quite a bit. I'll try to describe what was taking  
23 place where. We did install mobile hand washing  
24 stations in all the parks. We did do some soil  
25 replacement and reseeded in virtually all of the

1 parks. There was bank stabilization to minimize any  
2 erosion during flood events in a couple of the parks.  
3 We put wood chips on any pathways where people would be  
4 moving around within the parks, and, of course, in the  
5 play areas where the children may be playing with a  
6 swing set or whatever, we put wood chips down in that  
7 area as well, and in some instances, a few instances,  
8 where we did some asphalt paving and some concrete  
9 paving for walking paths.

10 And in the case of Imerman Park, they had used  
11 that in past years as a location for cross country  
12 events, and we put in a staging pad for cross country  
13 events there at the park. This is a picture of the  
14 hand washing stations. This particular picture was in  
15 Imerman Park. Again, in Imerman Park, this area  
16 that you see here was all -- we took all this soil out  
17 of here, put 6 inches of new fill in there and  
18 reseeded it. Also, you'll see just some of the part  
19 of the remodeling and activity here with the new hand  
20 rail and then again this same area where we did a lot  
21 of this bank stabilization work that I mentioned.

22 Here's a new floating dock that we put in for  
23 fishermen.

24 This is also from Imerman Park. It's not as  
25 clear as I'd like it to be, but it does demonstrate

1 the pathway that's been covered with wood chips. These  
2 are shots from Freeland Festival Park, and along this  
3 edge, you'll see a retaining wall here, and that's all  
4 brand new as of this past summer. In addition, we put  
5 in a fishing platform, quite a lovely site I think,  
6 and it's also handicapped accessible, and there's a  
7 considerable amount of bank stabilization in that area  
8 on the other side of that retaining wall that I showed  
9 you earlier.

10 I think AI has pretty well covered the Interim  
11 Actions as they relate to communications.  
12 Essentially, we've established Community Information  
13 Centers in all of the Tri-Cities area and recently two  
14 new ones in Bay City, so I think we're pretty well  
15 covered with having availability of DEQ, MDCH,  
16 Michigan Department of Agriculture and ATSDR relevant  
17 literature.

18 This was all the result of an escrow fund that we  
19 set up in February. We put about \$100,000 into escrow  
20 for the placement of these advisory signs in the parks  
21 and these other high use areas that AI outlined. This  
22 is a shot of a sign that's existing. I don't know if  
23 we've gotten to Imerman Park yet, but this may be  
24 replaced with the signage that AI has shown you, so we  
25 didn't quite make the cut here on the transition on

1 the new signage, but AI has shown you what that looks  
2 like.

3 Just one last slide here to identify some of the  
4 studies that have been done as part of the activity  
5 since the Framework was signed in January. A lot of  
6 this activity is ongoing. We have, of course, the  
7 U of M study, the Human Exposure Study. AI mentioned  
8 the MDCH Pilot Exposure Investigation. The Ecological  
9 Risk Assessment is underway. This is a four or five  
10 year project being conducted by Michigan State  
11 University. There have been some preliminary  
12 screening assessments done by a DEQ contractor.  
13 There's the Dow Wild Game Sampling Study that was  
14 conducted, Bioavailability Pilot Study, which I'll  
15 talk about in a little bit more detail here in a few  
16 minutes, and various soil and sediment scoping studies  
17 that DEQ and/or Dow contractors have completed, and  
18 there's some work that's been done -- called  
19 limnology -- which looks at how the sediment  
20 and soils move in flood events and in the river, and  
21 that all this information collectively will be  
22 absolutely essential in identifying what measures  
23 ought to be undertaken and where, when we get to the  
24 final solutions that we're seeking here.

25 I should mention at this point, if you haven't

1 already seen this, we've invested up to this point  
2 about \$35 million in the Interim Actions and in the  
3 funds that have been granted to the independent  
4 studies, which is essentially the U of M study and the  
5 MSU Ecological Risk Assessment. That concludes my  
6 comments on that portion.

7 Next I want to introduce Lauri Gorton. Lauri  
8 is, as she mentioned, with CH2M Hill, and Lauri is an  
9 expert in looking at the Remedial Investigation Work  
10 Plans and developing those plans, has had experience  
11 with other projects, and I'm happy to have her here  
12 this evening to review that work with you.

13 MS. GORTON: You'll have to forgive me  
14 because my presentation doesn't move as well as Art's  
15 does, and I don't have as many pictures as John did,  
16 but I want to give you a little bit of an overview  
17 tonight of the Remedial Investigation Work Plans we're  
18 preparing for Dow. Technology is a wonderful thing  
19 when it works.

20 So what I'd like to do tonight is give you a  
21 little bit of general background on Remedial  
22 Investigations, or RIs, in general, talk to you  
23 briefly about how we're developing the RI Work Plans  
24 so that the questions will be designed to answer and  
25 then give you an overview of the Midland and the

1 Tittabawassee River RIs.

2 As Michigan's Part 201 indicates, the purpose of  
3 a Remedial Investigation is to assess site conditions  
4 in order to select an appropriate remedial action, if  
5 one is required, that adequately addresses those  
6 conditions, and as you can see here, the RI is really  
7 the first of the major corrective action steps.  
8 They're often done in phases, so we get the  
9 information that we need sufficient to make decisions,  
10 and if the RI determines that there is a remedy  
11 required, a Feasibility Study is done to evaluate the  
12 different remedies. That draws from information  
13 developing the RI, as do the Remedial Action Plans,  
14 which designs the final actions themselves. As John  
15 mentioned before, the Interim Response Activities are  
16 something that's on-going throughout the process,  
17 usually until the final remedy is in place.

18 One of the reasons that we do an RI Work Plan is  
19 to provide the agencies with opportunities to review  
20 the methods and the approach that we're going to be  
21 using. So our RI Work Plans are prepared to meet the  
22 operating license and the regulatory requirements,  
23 both the State of Michigan's, applicable Federal  
24 guidelines, and it will be consistent with the  
25 Framework, as George mentioned before.

1           And I wanted to just take a minute and talk about  
2   how any Remedial Investigation is designed as we're  
3   using a fairly standard process here. We start by  
4   identifying what the investigation objectives are, and  
5   in this case, they are objectives such as determining  
6   the nature and extent of contamination, how much is  
7   there, where it is, what fate and transport mechanisms  
8   exist, so you establish your objectives. You identify  
9   the questions that you need to answer to address those  
10   objectives, and then one of the first things we do is  
11   we take as much existing information as we can, in  
12   this case information that DEQ has developed, as well  
13   as Dow, and you try to pull it into a big picture of  
14   how everything works together.

15           Al had used the term "conceptual site model," so  
16   it's our best picture at this time of how everything  
17   is working, and we use that to try to understand  
18   relationships between things like flooding and  
19   distance from the river and so on and so forth. At  
20   that point, the thing that you need to do is go back  
21   and look at your questions and look at the data that  
22   you have and figure out what's missing, where are the  
23   holes. We call those data gaps, and those are the  
24   things that we really write the work plan to address,  
25   is to fill in those missing pieces.



1       The outlines that we have here is actually a  
2       standard table of contents that both the Midland and  
3       Tittabawassee River work plans are being designed to  
4       address. These work plans will be several inches  
5       thick at some point, but you can generally break down  
6       the outline into three or four parts. The first  
7       sections deal with what's known and what we know about  
8       what's out there, and then we go to what our questions  
9       are or what we don't know. There will be information  
10      presented on exactly how we plan to go out and get  
11      that data, and then finally how the information will  
12      be used to assess risks.

13       Some of the questions that we're designing the  
14      RIs to answer, and the work plans actually will tell  
15      us how the RI will do that, are what are the vertical  
16      and lateral distribution of dioxin and furans. When  
17      we talk about nature and extent, that's what we mean,  
18      where are things, how extensive are they. We'll be  
19      evaluating whether or not there are other potential  
20      constituents of interest, what else is out there that  
21      may be of interest to us, and if we do find those  
22      things, what are their vertical and lateral  
23      distributions, to answer the question the gentleman  
24      asked earlier of what redistribution mechanisms are  
25      active, are there things that are causing what's in

1 the environment already to continue to move. Then, do  
2 concentrations in soil sediment or surface water pose  
3 an unacceptable risk to human environment, and  
4 finally, what remedial alternatives may be appropriate  
5 to address the risk that we might find.

6 I just want briefly to talk about the  
7 Tittabawassee River floodplain and the Midland work  
8 plans themselves. They are works in progress, but Al  
9 and George both mentioned that the scoping studies,  
10 the data that Al talked about around Imerman Park,  
11 one of the reasons that we did that Scoping Study late  
12 this year was as we rolled up all the other existing  
13 data there were some holes that we wanted to try and  
14 fill before we actually started developing the RI, so we proposed  
15 doing those studies this summer so we could write a better  
16 work plan design. The RI itself, the sampling, will  
17 include river sediments, floodplain soils, surface  
18 water, and we'll analyze those sediments for  
19 dioxins/furans and any other constituents, and we're  
20 in the process right now of determining where else we  
21 really need to go and sample, so that's a work in  
22 progress.

23 The Midland Area Soils RI Work Plan, as George  
24 and Al both mentioned, after discussions with EPA and  
25 DEQ, we did put a sampling plan in for some work to be

1       done before the RI itself that would go to the  
2       Bioavailability Study and also some additional data on  
3       potential constituents of interest, but the Remedial  
4       Investigation sampling will focus initially on surface  
5       soils within the city. Those will be analyzed for  
6       dioxins and furans, and again, we're in the process of  
7       evaluating what specific locations might be sampled.

8           And I think finally where we are right now, the  
9       work plans are underway. They're being developed  
10      consistent with the Scopes of Work. We will be  
11      submitting them to MDEQ on or before December 31st, as  
12      mentioned in the Framework and the Scopes of Work. We'll  
13      start implementation of the work plans within 45 days  
14      of receiving the approval from MDEQ, and then the work  
15      plan sampling data evaluation will be implemented, and  
16      finally, we will wrap the results up in a final  
17      report. So that was really all I had. John.

18           MR. MUSSER: I wanted to just spend a few  
19      minutes talking to you about the so-called  
20      Bioavailability Study work that's been ongoing and  
21      likely to have some additional work in that area. If  
22      you're like me,  
23      the first question is, what is it and why is  
24      it important.

25           Well, bioavailability is really an estimate of

1 risk which is based on how much of a chemical gets  
2 into a person's body. It's the amount of chemical  
3 that is absorbed from the intestinal tract into the  
4 body, and that's what we call bioavailability. In the  
5 instance of dioxins, there is a generic or a general  
6 assumption about bioavailability, which says about  
7 50 percent of the dioxin and furans that are attached to soil will  
8 detach from that soil and be absorbed into the body.  
9 Now we don't know if that's true or not, and I'll talk  
10 to you why we don't know if that's true or not in this  
11 particular example. There are a number of variables,  
12 which I'll speak to in a moment.

13 In the event that the bioavailability of dioxins and furans  
14 from local soils is different from this generic  
15 assumption, the risk would be different and the  
16 cleanup goals could well be adjusted as a result of  
17 that.

18 Just to try to illustrate this in some simple  
19 graphics, what you see here on the far left is --  
20 supposedly some soil with the dioxin and furans  
21 attached, and the way soil and these compounds interrelate in  
22 the soil -- the dioxins and furans  
23 attach very strongly to the soil, so that when its  
24 ingested by humans, hopefully mostly by, you know,  
25 unknowingly, that a certain amount of that is absorbed

1 into the blood and a certain amount is unabsorbed, and  
2 what we're trying to determine is how much is absorbed  
3 and how much is not absorbed in order to determine the  
4 bioavailability.

5 How bioavailability is used in risk assessment is  
6 essentially using the amount -- knowing the amount of  
7 chemical in the soil, how much of it is actually  
8 ingested, looking at the amount that's actually  
9 absorbed from the amount that was ingested, and then  
10 applying what we call toxicity factors, and this is  
11 simply an estimate of the toxicity of the chemical  
12 compound in the body, and in this case, mostly  
13 based on tests done with laboratory animals, not human  
14 based testing, and then there is an estimated dose  
15 based on how much was absorbed. You combine those  
16 things to come to your estimate of risk, and this is  
17 essentially the process that will be followed as we  
18 develop the risk assessment looking at local soils.

19 I talked about some variables that may exist that  
20 could impact on the bioavailability of dioxins and  
21 furans. Included in that list would be chemical  
22 characteristics, also the soil characteristics. There  
23 are different types of soils, and part of our protocol  
24 for the bioavailability studies is to look at these  
25 different kinds of soils and evaluate the differences

1 in how those soils impact on bioavailability, and the  
2 length of the time the chemical has been in the soil  
3 can also influence its bioavailability and indeed the  
4 way the chemical got into the soil.

5 So what have we done so far? There have been  
6 some test tube studies that Dow has conducted that  
7 showed a relatively low potential for bioavailability.  
8 We're talking about in the neighborhood of 25 percent.  
9 These were based on soil samples from the Midland  
10 area, but they were again test tube samples, and they  
11 were using an artificial or a simulated intestinal  
12 tract. We've also provided some funding for DEQ's  
13 establishment of a scientific peer review panel which  
14 has been assisting the Department and Dow in defining  
15 appropriate protocol for the bioavailability studies  
16 that we want to undertake.

17 The Pilot Animal Study for bioavailability was  
18 undertaken, and this was essentially to determine the  
19 protocol for the best way to determine the  
20 bioavailability of dioxins and furans in local soils,  
21 and we tested both rats, because they are a classic  
22 laboratory animal, and swine or pigs, because they  
23 have an intestinal tract which is fairly similar to  
24 humans. The pilot study results gave us some  
25 unexpected answers between the rats and the swine, and

1 we've collectively agreed with input from the Advisory  
2 Panel that we're in need of a follow up pilot study to  
3 resolve these questions that were raised by the  
4 earlier preliminary pilot study. We will be doing a  
5 follow up study, again with input from the peer review  
6 panel, looking at rats in order to resolve this anomaly  
7 in the data.

8 The follow up study design changes have been  
9 recommended by the DEQ (sic – scientific peer) review panel and incorporated  
10 into a revised protocol. We're anticipating that we  
11 may well get this study underway before the end of  
12 this year, and if that's the case, we should be able  
13 to have completed this pilot study follow-up by the  
14 spring of next year.

15 As we look down the road past 2006, our effort  
16 will be to finalize our characterization of the local  
17 soils, to make sure that we understand the differences  
18 and that those are included in the protocol for any  
19 additional bioavailability studies that will be  
20 undertaken, and of course, again, the review panel  
21 will weigh in on the need for and the protocol for any  
22 of these additional bioavailability testing activities  
23 that are agreed need to be done, and then ultimately  
24 based on all the data that we have, assessments will  
25 be made on the impact on cleanup goals. That

1 concludes the Dow presentations.

2 MR. NELSON: Are there questions for the  
3 folks from Dow regarding their presentations tonight?

4 AUDIENCE MEMBER: If I could ask, John, what  
5 percentage of Priority 1 areas have received an  
6 interim response?

7 MR. MUSSER: The question was, what  
8 percentage of the Priority 1 areas have received the  
9 interim actions?

10 AUDIENCE MEMBER: Right.

11 MR. MUSSER: We had 80 percent participation  
12 in Midland, and I think the number -- the last number  
13 I had was 79 percent along the Tittabawassee River.

14 AUDIENCE MEMBER: So you've surveyed all of  
15 them?

16 MR. MUSSER: We're essentially complete with  
17 that activity. There are -- as I mentioned, the balance of  
18 20 percent is comprised of people who either rejected  
19 any of the services or people that just have not  
20 responded to repeated attempts to arrange a meeting.

21 AUDIENCE MEMBER: Okay. The follow-up  
22 question is, what's your timeline for beginning  
23 interim responses for those between the 90 and 1000  
24 parts per trillion? What is your timeline for those  
25 who are living in areas exposed to above 90 to 1000



1 parts per trillion?

2 MR. MUSSER: Well, if they were -- the areas  
3 that we've identified for interim actions for Priority  
4 1s have been identified, and those have been  
5 addressed, as I said, almost completely at this stage.

6 AUDIENCE MEMBER: But aren't those only 1000  
7 or above?

8 MR. MUSSER: They range -- we don't have the  
9 data on every individual property. We identified the  
10 properties identified as Priority 1 as a result of  
11 looking at GIS maps of the '04 flood event, and that was an  
12 evaluation that DEQ made ultimately, and we agreed  
13 with it, and said these are the Priority 1  
14 properties. The same look was used for developing the  
15 list of Priority 2 properties.

16 AUDIENCE MEMBER: So everyone that  
17 potentially is at 90 or above has been --

18 MR. MUSSER: We don't have that data, Terry.

19 AUDIENCE MEMBER: We don't?

20 MR. MUSSER: We only know, you know, based  
21 on the flooding, we said the flooding that occurred in  
22 the '04 flood, if it was within 20 feet of the home or  
23 a structure, a building or a house, that's where we --  
24 that's where we drew the lines and said those are  
25 Priority 1 properties.

1 MR. SYGO: For clarification, remember that  
2 the IRAs were intended to address those areas that  
3 required some sort of intervention, and those were the  
4 numbers at 1000 parts per trillion. The areas you're  
5 talking about between 90 and 1000 would be addressed as  
6 part of the Remedial Investigation Work Plan that's  
7 being developed. So any further work that's necessary  
8 in terms of characterization would be conducted as  
9 part of that process.

10 AUDIENCE MEMBER: So there are people who  
11 are living in areas that are between 90 and 1000 who  
12 have not received any interim responses? You'll  
13 determine that at some later date?

14 MR. SYGO: Again, we don't know -- as John  
15 is saying, we don't know those numbers, but there  
16 are -- you know, again, the areas that were originally  
17 identified, we (DEQ) were convinced, exceeded the ATSDR  
18 number and they required interventions. Areas that  
19 were below that are still to be characterized and  
20 evaluated as part of the RI Work Plan as they do the  
21 Remedial Investigation.

22 AUDIENCE MEMBER: Okay. Thank you, Jim.

23 MR. NELSON: Other questions?

24 AUDIENCE MEMBER: Back on a couple of  
25 different slides, you showed where you took dirt out

1 and then covered it up. What happened to -- or what  
2 did you do with the dirt that you take out that's  
3 possibly contaminated?

4 MR. MUSSER: I believe, and Ben, you can  
5 correct me if I'm mistaken here, that that was  
6 deposited in a qualified landfill in the area.

7 AUDIENCE MEMBER: I'm Michelle with the Lone  
8 Tree Council. Jim, you may want to jump in on this  
9 question, but I'd like to hear what either one of you  
10 have to say on this question. Those Remedial  
11 Investigation Work Plans that are pending, I want to  
12 know if they're in jeopardy because of legislation  
13 pending in the Senate that would change or alter the  
14 facility designation?

15 MR. MUSSER: I'll let the State take a shot  
16 at that first.

17 MR. SYGO: I'm trying to understand the  
18 question. If the Remedial Investigation Work Plan is  
19 in jeopardy as a result --

20 AUDIENCE MEMBER: Because of Senate --  
21 right, because of House Bill 4617 which would  
22 essentially lift the facility designation off of the  
23 river.

24 MR. SYGO: I understand. I would have to  
25 answer, no, I don't believe that the work plan and

1 further efforts are in jeopardy, and my explanation  
2 for that is premised on this. Irrespective of what  
3 happens with Part 201, which is what we use to  
4 implement corrective action within the State of  
5 Michigan, under the Resource Conservation and Recovery  
6 Act, corrective action is still required, and even if  
7 we don't use what the State cleanup standards are, we  
8 would have to revert to using standards that would be  
9 acceptable to EPA under RCRA.

10 AUDIENCE MEMBER: The reason I asked the  
11 question is because I went back today, and correct me if  
12 I'm wrong, and I read Part 201, Jim, and it is the  
13 facility designation that triggers the activity --  
14 it's the facility designation that triggers the  
15 Remedial Investigation Work Plans and subsequent  
16 Remedial Action Plans. So if it's the facility that  
17 triggers it, I'm still not clear on why if it's lifted  
18 it's not going to change it?

19 MR. SYGO: Well, again, it's difficult to  
20 talk about this from a perspective that I don't know  
21 what they're going to do with that legislation, but  
22 again, Michigan has a process and Michigan is a  
23 causation state. The State of Michigan has a  
24 memorandum of understanding with EPA, which has been  
25 signed by EPA as well, that states to the effect that,

1 utilizing our 201 criteria and our 201 process in  
2 Michigan is an acceptable process to achieve  
3 corrective action under the Resource Conservation and  
4 Recovery Act.

5 Now if for some reason we can't use the Part 201  
6 process, that would void likely the memorandum of  
7 understanding between EPA and the State, but that  
8 wouldn't void the need to still complete corrective  
9 action at the site. What we would likely do in those  
10 situations is divert to those types of criteria that  
11 EPA would find acceptable then. We just wouldn't use  
12 the State analog for a requisite.

13 AUDIENCE MEMBER: Just one more question, if  
14 I could. John, thank you for your presentation  
15 tonight. What I would like to know from Dow  
16 Chemical's perspective, if this House Bill does pass,  
17 does Dow have any issues regarding that? Would Dow  
18 ask for any reopening on their license to have it  
19 reviewed, or would you alter anything you're planning  
20 on doing as a result of the passage of this  
21 legislation?

22 MS. CARRINGTON: I'd like to make it very  
23 clear to this audience and to the Tri-Counties  
24 community, Dow Chemical is absolutely committed to  
25 complying with its operating license and going forward

1 under the Framework For An Agreement, which we signed  
2 with the State, and I don't see that there's any  
3 relevance to what's going on in this regard. So I  
4 just want to assure everyone, we're absolutely forging  
5 ahead, working closely with the regulatory agencies to  
6 address and resolve this Mid-Michigan dioxin and furan situation.

7 AUDIENCE MEMBER: And Susan, the only reason  
8 I'm asking --

9 (Clapping from the audience)

10 AUDIENCE MEMBER: -- again is because your  
11 lobbyists have been down there lobbying the Senate on  
12 this bill, so I'm just real curious about it. Thank  
13 you.

14 MR. NELSON: Okay. Any other questions  
15 here? Sir, use the mic, please.

16 AUDIENCE MEMBER: Bill Egerer with Midland  
17 Matters. I have two parts of a question for you,  
18 John, and maybe Jim. There was some mention of the  
19 exposure study. Can you talk about how the exposure  
20 study results, which have been forecast to come out in  
21 the fall of 2006, how those will be considered in the  
22 RI WPs?

23 And the other part is, on one of the slides, it  
24 talked about unacceptable risk -- do concentrations in  
25 soil sediment, et cetera, pose an unacceptable risk?

1       How is unacceptable risk being defined? I'd really  
2       like to get both of you.

3               MR. MUSSER: I guess all I would offer here,  
4       and I think it's really a State question in both  
5       situations, but I would just offer that there is --  
6       and I'm sure Jim had mentioned this -- reference to  
7       this in the Framework For An Agreement which does specify  
8       that there will be a consideration of the  
9       Bioavailability Study. So, you know, that's one  
10      component of the answer. I'm going to let Jim and/or  
11      DEQ manage the rest of that.

12             MR. SYGO: Well, when you talk about  
13      unacceptable risk, that's going to be dependent on the  
14      public health assessment -- or the health assessment  
15      that Dow will be conducting as part of their Remedial  
16      Investigation Work Plan -- well, the Remedial  
17      Investigation that's being prepared as part of the  
18      work plan, and the issue with that is they need the  
19      information on the bioavailability. They need to  
20      develop that to determine what type of risk assessment  
21      will come out of that, what kind of changes they can  
22      make to the State's assessment basically.

23             And I can't tell you what that number will be at  
24      this point. That number is yet to be determined in  
25      this particular situation because of the way it's

1 going about in terms of a specific characterization in  
2 this area.

3 AUDIENCE MEMBER: Is the process -- I  
4 understand the number can't be known because you don't  
5 have all the data, but is the process for how the  
6 exposure study results might be considered, has that  
7 been defined?

8 MR. SYGO: When you're talking exposure  
9 studies --

10 AUDIENCE MEMBER: I'm not talking about  
11 bioavailability studies.

12 MR. SYGO: -- you're talking about the  
13 University of Michigan study?

14 AUDIENCE MEMBER: Correct.

15 MR. SYGO: The process has not been  
16 specifically defined on how that will be utilized, but  
17 the expectation, if the study is conducted properly  
18 and they have all the information that Dr. Garabrant  
19 expects that they're going to be able to obtain, is  
20 that it will provide valuable information regarding  
21 the types of pathways that are most important in  
22 dealing with the types of risk assessments that Dow  
23 will be conducting as part of their public health  
24 assessments basically.

25 AUDIENCE MEMBER: So there's nothing more



1     you can define as far as the process of how to use  
2     that information at this point?

3             MR. SYGO: From my standpoint, no. Again,  
4     part of that process is embedded in the Scopes of  
5     Work, and part of that work will be completed as part  
6     of the Remedial Investigation.

7             AUDIENCE MEMBER: Okay. Thank you.

8             MR. NELSON: Okay. I'm going to move on,  
9     because I want to be sure we do the last presentation.  
10    Then the whole rest of the time is question and  
11    answer. So please hold your questions. I'm not  
12    trying to cut people off, but I want to respect these  
13    folks who are ready to present.

14            MR. SYGO: A very quick introduction into  
15    this session. Those of you that remember the  
16    Framework being signed back in January of this year,  
17    we indicated that the Framework -- that one of the  
18    aspects of this was associated with trying to move  
19    ahead with this process and to come up with what would  
20    ultimately be a global comprehensive agreement to move  
21    the process forward and also to include those portions  
22    of the Saginaw River and include those earlier so we  
23    could come up with this comprehensive settlement with  
24    the -- between the State and Dow.

25            We also indicated in that Framework it was going

1 to be necessary to involve various other agencies as  
2 part of that process, and that's what Lisa is going to  
3 be talking about today. As some of you have probably  
4 read in the paper, we've started that process. The  
5 governmental agencies referred to in the Framework had  
6 their first meeting in July. We had another meeting  
7 in early September, and we also had our first meeting  
8 with Dow Chemical and the governmental agencies. I  
9 believe that was on September 29th, if I'm not  
10 mistaken.

11 One of the reasons we felt this was important to  
12 start this process early is some of the data work that  
13 might be needed as part of what Lisa is going to be  
14 talking about, and that's the primary concern right  
15 now, to make sure that we're coordinating data  
16 appropriately, we're collecting data appropriately and  
17 we're managing it appropriately.

18 And with that, I think part of the natural  
19 resource damages is one element of this comprehensive  
20 agreement. We also have to deal with corrective  
21 action and our license and everything else, but one  
22 thing I wanted to mention is that before any  
23 comprehensive agreement moved forward, there's a  
24 commitment to take that out for public hearing and  
25 public comment, so that there's an opportunity for

1 people to look at that before anything is entered.

2 MS. WILLIAMS: What I'm going to talk to you  
3 about tonight is natural resource damage assessment,  
4 which is a process that works in parallel with the  
5 corrective action process that you've heard about.  
6 My name is Lisa Williams. I'm with the U.S. Fish and  
7 Wildlife Service in our office in East Lansing. We're  
8 a Federal agency, part of the Department of Interior,  
9 but tonight, I'm speaking on behalf of a group of  
10 Natural Resource Managers that we call Trustees for  
11 purposes of this process. That includes the Michigan  
12 Department of Natural Resources, DEQ, the Michigan  
13 Attorney General, all on behalf of the State, the  
14 Saginaw Chippewa Tribe, the Bureau of Indian Affairs  
15 and the Fish and Wildlife Service.

16 What I'm going to talk about just briefly tonight  
17 is give you an introduction to natural resource damage  
18 assessment as a process. We'll have other meetings in  
19 the future where we talk about that in more detail,  
20 talk about who the Trustees are, what their role is  
21 and how this fits in with this site that Jim's given  
22 you a little bit of a preview of. I'm going to refer  
23 to NRDA, because natural resource damage assessment is  
24 a mouthful, and also the ultimate goal of NRDA is  
25 restoration, and so when I say NRDA, I mean natural

1 resource damage assessment and restoration.

2 NRDA was created by Congress in addition to the  
3 processes for the cleanup of hazardous substances, and  
4 this has been recognized in both Federal and State  
5 law. In this process, various government agencies act  
6 on behalf of the public to replenish the state of  
7 common natural resources for public use and enjoyment.

8 So this is not -- there aren't private claims, private  
9 causes of action that come under natural resource  
10 damage assessment. This is dealing with public  
11 resources.

12 The goals of NRDA, restore the natural resources  
13 and the services they provide, and in the context of  
14 NRDA, restore has a broad meaning. It refers to  
15 restoring, rehabilitating, replacing or acquiring the  
16 equivalent of natural resources and the services that  
17 they provide.

18 This is a compensatory statute, not punitive.

19 The goal is to make the public whole, and the  
20 restoration that we're talking about comes into two  
21 basic types. One of it is to restore to baseline and  
22 the other is to compensate the public for lost uses  
23 over time, and I'll talk a little bit more about each  
24 of those.

25 For purposes of NRDA, baseline means the

1 condition that the resources would have been in had  
2 the release of hazardous substances not occurred.  
3 This is different than restoring to pre-white  
4 settlement or some sort of pristine condition, because  
5 NRDA refers specifically to results of releases of  
6 hazardous substances. One of the things that NRDA can  
7 also deal with are indirect effects of contaminants  
8 having been released. If addressing a natural  
9 resource injury and breaking a pathway, protecting  
10 against risks, results in additional habitat damages,  
11 then the NRDA process looks at the magnitude of those  
12 damages and tries to compensate the public for those.  
13 In compensatory restoration, what's still done is  
14 restoration. They're still working with the natural  
15 resources, working with the habitat, in order to  
16 replace those natural resources or enhance them over  
17 the future.

18 So I've been talking about natural resources.  
19 Under the NRDA provisions, natural resources includes  
20 land, fish, wildlife, air, water, ground water,  
21 drinking water supplies, other such resources that  
22 support ecosystems to the extent that they are  
23 managed by, held in trust by, or a lawyer term that I  
24 don't pretend to understand, "appertaining to Trustees,"  
25 and I'd like to note in particular, since the Saginaw

1 Chippewa Indian Tribe is involved in this NRDA, the  
2 Tribal natural resources include natural resources  
3 used for Tribal subsistence and cultural and  
4 spiritual use as well.

5 Trustees in general for NRDA are States, Tribes,  
6 the Secretaries of Federal departments, including  
7 Agriculture, Commerce, Defense, Energy and Interior,  
8 and in the specific case of oil spills, NRDA includes  
9 foreign governments as well. For this case, what  
10 we're talking about is the State being represented by  
11 DEQ, DNR and the Attorney General. The Saginaw  
12 Chippewa Indian Tribe is representing itself, and the  
13 Secretary of Interior has delegated her authority as  
14 Trustee to the Regional Director of the Fish and  
15 Wildlife Service up in Minneapolis on behalf of the  
16 Bureau of Service and Indian Bureau of Affairs.

17 What do Trustees do? First of all, we work  
18 together. Trustees are working on forming an official  
19 Trustee Council under a memorandum of understanding,  
20 and we are working to coordinate with the ongoing  
21 cleanup process, the corrective action, by integrating  
22 Trustee concerns and science into the investigations  
23 that are ongoing and into the planning and evaluation  
24 of particular future cleanup options. We're also  
25 going to be assessing injuries to natural resources,

1     which of the birds or fish might have been injured,  
2     over what time period, over what spatial extent and  
3     what can be done about that, how can we turn these  
4     resources to the condition they would have been had  
5     the release of hazardous substances not occurred, how  
6     can we compensate the public for losses over time.

7         And then one of, I think, our major goals as  
8     Trustees is to coordinate restoration alternatives  
9     with cleanup plans. If equipment is going to go out  
10    to move dirt and we can incorporate restoring a  
11    habitat with those same pieces of equipment, that only  
12    makes sense, and the Trustees also oversee and  
13    implement any restoration plans that would come out of  
14    these determinations.

15        So for this site, as Jim mentioned, the Framework  
16    For An Agreement talked about getting multiple  
17    stakeholders involved in order to resolve multiple  
18    issues related to this site and work toward a  
19    comprehensive settlement. The Trustees wholeheartedly  
20    agreed. We wanted to include -- the Framework even  
21    talks about restoration, and we want to fit into that.  
22    Nothing that the Trustees do should slow down or  
23    change the schedule of the corrective action, and  
24    you've heard about these steps already this evening.

25        What we hope to do in the NRDA process is make

1 use of the data that's already being collected. Data  
2 from the Remedial Investigation, the Ecological Risk  
3 Assessment feed in very well with the NRDA process,  
4 and we've been working with the Project Managers for  
5 Dow and DEQ to talk about what types of data  
6 collection are important for the Trustees, so all of  
7 that data can be collected once under the same sort of  
8 quality assurance plans, and everybody can share the  
9 same data, but we'll also be looking at ways to  
10 determine the amounts and types of restoration needed,  
11 and this is different from the corrective action  
12 process.

13 And the other thing that I'd like to point out is  
14 that the more effective a cleanup is on a site and the  
15 sooner it happens, the less compensatory restoration  
16 is required. So part of my job is to reduce the need  
17 for compensatory restoration by working with people  
18 early in the process on these things like the interim  
19 actions and incorporating Trustee concerns into the  
20 cleanup design.

21 So over the short-term right now, we're working  
22 with the other parties to look at what data is  
23 available and how to have it organized and available  
24 to the Trustees, so that we're not reinventing the  
25 wheel, and we're providing input into some of the



1 study designs that are going on now with the work  
2 plans. We're participating in the discussions that  
3 Jim mentioned, and we're working within ourselves to  
4 organize the existing data, become familiar with the  
5 existing data out there, in order to officially  
6 document the information that's required to NRDA. We  
7 are, after all, parts of bureaucracies and need to  
8 talk to our management effectively.

9 Over the long-term, we'll be looking at the  
10 injuries and coming to the public and Dow and talking  
11 about what ways we can do that, what injuries we need  
12 to look at. We'll also be looking at ideas for what  
13 sort of restoration projects make sense for this river  
14 system, and for that purpose, we will definitely be  
15 coming out and talking to as many folks as possible.  
16 We also want to use the existing process and work with  
17 DEQ and Dow to take advantage of the communication  
18 networks that are being set up, again not reinventing  
19 the wheel, trying to use these community meetings, or  
20 if we need to have specific meetings for NRDA to  
21 solicit input, for example, on restoration projects,  
22 we would use these series of meetings to announce that  
23 and help get the word out for that. The Trustees will  
24 likely establish their own website to post documents,  
25 but our hope is that will be cross referenced with any

1 other websites related to the site.

2 So, we're almost there. The goal is to restore  
3 both baseline and compensatory. We're coordinating.  
4 It's a complimentary parallel, yet distinct, process  
5 from the cleanup activities. We're engaged in early  
6 involvement. We think that's a good thing. We're  
7 working toward a comprehensive resolution of issues,  
8 and we're going to be coming back to you, asking for  
9 comments at certain times, and with that, the other  
10 thing that you'll see in your packet is that I've  
11 included contact information for the representatives  
12 for the different Trustee entities, but I don't have a  
13 website to give you yet. Thank you.

14 MR. NELSON: Are there questions regarding  
15 Lisa's presentation before we go to general questions  
16 about the entire thing?

17 AUDIENCE MEMBER: Lisa, I observed a lot of  
18 people working out along the Tittabawassee River  
19 floodplain banding birds, counting how many -- quite a  
20 big variety of birds there are along the whole  
21 floodplain. A group from Michigan State University,  
22 are you familiar with this group?

23 MS. WILLIAMS: Yes, I am.

24 AUDIENCE MEMBER: And are you working with  
25 this group?

1 MS. WILLIAMS: To some extent.

2 AUDIENCE MEMBER: Because what it looks like  
3 they're doing actually by banding the birds, they're  
4 able to identify if those birds are going to stay in  
5 the area or go off, you know, somewhere else, so they  
6 can actually see if there is any adverse effect on the  
7 critters there in the floodplain.

8 MS. WILLIAMS: Exactly. We're hoping that  
9 those studies provide a lot of information that  
10 contributes to the natural resource damage assessment.  
11 The Trustees have been looking at some of their study  
12 plans and hearing some of their interim results. I've  
13 gone out in the field with those crews a couple of  
14 times, and that information, you know, it's -- they're  
15 doing -- to this point, you know, doing a good job of  
16 documenting their work to comply with good quality  
17 assurance plans.

18 So we're hopeful that that work feeds into both  
19 the ecological risk assessment, the corrective action  
20 and for some of the injury questions that we're going  
21 to have as part of the interim data process.

22 AUDIENCE MEMBER: Thank you.

23 MR. NELSON: Are there other questions for  
24 Lisa before we go to general questions?

25 AUDIENCE MEMBER: Lisa, thank you. Lisa, do

1     you know what the geographic boundary is for the NRDA?  
2     From what point in the river to where?  
3             MS. WILLIAMS: No. We haven't officially  
4     determined what our assessment area is going to be.  
5             AUDIENCE MEMBER: And how do you go about  
6     doing that?  
7             MS. WILLIAMS: It will probably revolve  
8     around a definition that includes something to the  
9     extent of wherever the contaminants have come to be  
10    located, rather than drawing a bright line before  
11    we've done a full assessment.  
12            AUDIENCE MEMBER: Okay. The other thing I  
13    wanted to ask was I understand looking at the number  
14    of websites that the Trustees are permitted -- there's  
15    a confidentiality provision in there that's permitted  
16    to the Trustees, and I would just like you to talk a  
17    little bit about what the purpose of that  
18    confidentiality clause is and what it perhaps could  
19    keep secret from the public, if anything at all, and  
20    also, is that confidentiality agreement that you --  
21    that the Trustees would have, is the agreement itself  
22    a FOIAble document, and one other question, because  
23    I'll send all of these to you in an e-mail --  
24            MS. WILLIAMS: And I'll forward them to my  
25    attorney.

1           AUDIENCE MEMBER: That extensive data  
2 collection that is going to be required for this NRDA,  
3 how will that collection process go forward? One of  
4 my big concerns is that a decision is going to be made  
5 on things before you have adequate data collection,  
6 and so, you know, I think that obviously needs to be a  
7 priority, and I'm sure it is for you folks, but you  
8 know how things happen.

9           But that one, and the other thing, is there any  
10 potential for that data that's collected to be part of  
11 that confidentiality agreement where that data would  
12 not be, for whatever reason, shared with the public.  
13 Thank you very much.

14           MS. WILLIAMS: Without my attorney present,  
15 the perspective of the Trustees is that data -- our  
16 data should be released to the public and should be  
17 part of an open process. Interpretations of that data  
18 may differ, and there are many, many points in the  
19 NRDA process where Trustees work with the public to  
20 solicit input on assessment and on restoration  
21 opportunities, and we strive for that to be a  
22 transparent process.

23           All that being said, in order to have useful  
24 settlement negotiations that allow people to do some  
25 give and take, there will be points where confidential

1 discussions are utilized, but in terms of data and the  
2 amount of data being collected, we hope to follow  
3 current models, which involve getting data through  
4 quality assurance procedures, getting the data  
5 released, and the interpretations may be something  
6 that may be worked out over time and eventually be  
7 talked about openly, but there may even need to be  
8 some work on the interpretations.

9 MR. NELSON: Okay. We have reached the  
10 8:30 hour. I want to compliment all the presenters  
11 for their extremely timely presentations. Excellent  
12 job.

13 Now we have an opportunity to ask other questions  
14 that you may have on things that were presented. I  
15 know two of you had raised your hands earlier, and I'd  
16 like to call on you folks first prior to other folks  
17 because I had to cut you off. So, sir, you're the  
18 first one.

19 AUDIENCE MEMBER: I don't know if this is  
20 for Mr. Sygo or the people from Dow. Somebody's got  
21 to ask a dumb question, so I thought I'd get one in  
22 tonight. When -- a lot of the presentation Al Taylor  
23 was doing was about showing the dioxin (and furans) is down river  
24 from Dow Chemical, and I believe Dow said in the  
25 beginning that there was a way they could identify the

1 dioxin (and furans) in the river.

2 I don't know if you do it with a -- I don't know  
3 what the process is, but somehow they know the dioxin (and furans)  
4 and from what time period it came from, and right away  
5 said it was their dioxin (and furans). Is that a true statement,  
6 that you can identify different kinds of dioxins (and furans)?

7 MS. CARRINGTON: Yes, you're correct. It's  
8 a true statement that you can look at the mix of 17  
9 different congeners, they're called, from a chemical  
10 perspective, dioxins and furans, and look at that  
11 analytical pattern and connect it to where the source  
12 came from, whether it's a combustion of wood,  
13 impurities from an old factory process, so you can  
14 look at those patterns.

15 And what we're talking about here when we're  
16 dealing with this whole matter of mid-Michigan dioxin and furan  
17 situation is, as Al said earlier, we believe there's  
18 two different mechanisms by which dioxins and furans  
19 would have been dispersed from the Midland plant site  
20 historically. Remember, we're talking about  
21 historical matter here.

22 In the Midland City area, those soils we believe  
23 would have gotten dioxins and furans from hazardous  
24 waste incineration, which goes back decades, and there  
25 we're talking about air deposition, and the mixture

1     there looks like -- more like 30 percent of a certain  
2     kind of dioxin called TCDD. What it looks like in the  
3     waterways is a very different mix, where there's only  
4     5 percent TCDD and over 90 percent furans, when I do  
5     the calculation, and in fact, over half of that is  
6     only two furans, and it was very mystifying to us at  
7     first, because we didn't recognize it as anything that  
8     had been produced by us or an impurity -- more  
9     correctly an impurity, something that hadn't been  
10    produced for a long time. It looks very much like  
11    patterns that would come from something that would  
12    have been produced nearly 100 years ago pre-World  
13    War I on our Midland manufacturing site.

14        So when these new data came out a few years ago,  
15    it was very confusing because it didn't look anything  
16    like those other patterns. So again, we think the  
17    likely source of contamination for Midland soils from  
18    these chemicals is again historical, going back  
19    decades, but air deposition, different patterns from  
20    what we see in the waterways, which looks a lot like  
21    processes that would have existed pre-World War I, and  
22    some of that came to our attention because we looked  
23    at these analytical patterns, and I'll credit Al again  
24    for pointing out that there were some manufacturing  
25    data from places in Europe that pointed us in that



1 direction, so probably a long explanation but maybe  
2 beneficial to the broad group.

3 AUDIENCE MEMBER: I'm just trying to get to  
4 my dumb question. If you can identify the dioxins (and furans) --  
5 you know, when you look at the dioxins (and furans), you can say,  
6 okay, this dioxin (or furan) is from here and this dioxin (or furan) is from  
7 there, will you have that same ability when you look  
8 at dioxins (and furans) that are found in people's blood serum to  
9 know if they're the same dioxins (and furans) that came from that  
10 process that we're now saying is in the river  
11 sediment?

12 MS. CARRINGTON: Yes. You can look at the  
13 congener patterns and determine is it related to where  
14 most of us have dioxins and furans in our blood from  
15 the national food supply or is there any influence  
16 from these kinds of congener patterns which you would  
17 see in soils and sediments along the Tittabawassee  
18 River. You'd expect that to be quite different.

19 AUDIENCE MEMBER: Will Dr. Garabrant's  
20 study have that kind of result to say if it's from  
21 food or to say if it's from soil?

22 MS. CARRINGTON: Yes. He can best answer  
23 that. It's his study, but I think it looks like a  
24 very fine job, and he'll be able to discern all of  
25 that.

1 AUDIENCE MEMBER: Do any of the other  
2 studies have that kind of result preliminary yet?

3 MS. CARRINGTON: I'd have to ask maybe  
4 somebody from MDCH to comment. We haven't seen the  
5 congener profiles from their study.

6 MR. BOYLE: I'm not a toxicologist, but I  
7 sit next to one, and I don't think we'd agree that you  
8 can tell from people's blood or body tissue, the  
9 congener profiles, and match it to the source that  
10 they're exposed to.

11 AUDIENCE MEMBER: You don't think that once  
12 it's in the blood that you can --

13 MR. BOYLE: No. I don't think we'd agree  
14 with that statement.

15 MR. NELSON: Dow says they have a  
16 toxicologist they'd like to have to respond to this.

17 MR. BUDINSKY: I'm a  
18 toxicologist with Dow, and I have to disagree with  
19 MDCH. I believe that, in fact, if you are exposed to  
20 these unique furans in the bloodstream that you should  
21 be able to see them in the blood profiles in the U of  
22 M study, so I'm hoping that's the case that we can  
23 differentiate dietary exposure from, say, soil  
24 exposures, wild game exposure. In fact, if you look  
25 at our wild game study, in fact, you see deer, the

1 turkey, the squirrel, their congener profile is very  
2 similar to what's in the soil, so you'd expect to see  
3 the same thing in people.

4 AUDIENCE MEMBER: But they don't eat beef  
5 and stuff, too.

6 MR. BUDINSKY: That's true, but their  
7 congener profile in the wild game study is pretty  
8 similar to what's in the soil.

9 AUDIENCE MEMBER: Because their sole diet is  
10 plant life, correct?

11 MR. BUDINSKY: They're picking it up from  
12 the soil.

13 MR. NELSON: Two more comments on this.

14 MS. CARRINGTON: We've been studying our  
15 Dow workers for over 50 years of history of their work  
16 experience, and we did a pilot blood study on these  
17 workers who had the greatest exposure to dioxins, 2,200 of us is what the  
18 whole cohort is, and published those results. It was  
19 a peer review study published in the Epidemiological  
20 Journal last year, and we were able to very much  
21 discern where those dioxin and furan exposures came  
22 from, whether it was environmental, whether it was  
23 related to diet, whether it was related to the  
24 specific plant they worked in.

25 So we can very clearly, and I think scientists

1 have shown, that you can analyze the congener profile  
2 clearly, and you can with the correct powers,  
3 statistical power and epidemiological study, associate  
4 that with the source in your bloodstream.

5 MS. WILLIAMS: I appreciate what you said,  
6 Susan, and I have not read that study, and it's true  
7 that the congener patterns in the wild game could be  
8 related back to the congener patterns in some of the  
9 sediment in the soils.

10 My concern with looking at an individual person's  
11 blood is that there are a lot of variables that could  
12 go in there, and although you might be able to say  
13 some things epidemiologically about general groups of  
14 people, it would be very hard to draw conclusions  
15 about any one individual and that the dioxins and di  
16 -benzofurans partitioned and have different  
17 solubilities in blood and in tissue related to the  
18 partitioning to fats and proteins, and it could be a  
19 bit complicated. I'll be interested to see what the  
20 patterns look like in the U of M study.

21 MR. NELSON: There was one other person who  
22 had raised their hand to ask a question prior, and  
23 then you're next, sir. That other people want to come  
24 forward? Not seeing that person forward, sir, you're  
25 next.

1           AUDIENCE MEMBER: I'm John Witzke with  
2 Michigan United Conservations Club, Lone Tree Council  
3 and Michigan Resource Tours, which is an organization  
4 formed by DNR retired officials, and I'd like to ask,  
5 Jim, we talked about remediation on these lands and  
6 soil replacement. Will there be further testing on  
7 that new soil that's being brought in, in the future,  
8 to see what effect what readings dioxin levels would  
9 be later or if they will improve or if it's going to  
10 be a true cure all, Jim?

11           MR. SYGO: Are you referring to the soils  
12 that were brought onto the areas where the IRAs were  
13 being completed?

14           AUDIENCE MEMBER: Correct.

15           MR. SYGO: In that particular case, part of  
16 the obligation of the Framework and the IRAs that were  
17 identified, if there's continued flooding, frequently  
18 flooding of those areas, the answer would be, yes,  
19 that would have to be readdressed and those areas  
20 would have to be readdressed as well, as well as the  
21 homes and everything else.

22           From a perspective of the soils themselves, as we  
23 get into whatever remediation plans there might be,  
24 again, that's more into the Remedial Investigation  
25 Work Plan development, and everybody will have an

1 opportunity to see what's being proposed as part of  
2 that, hopefully at the February meeting, and you know,  
3 we'll wait to see what the plans are to investigate  
4 that.

5 AUDIENCE MEMBER: Whoever does testing, if  
6 there's going to be testing and so on, will the State  
7 overview those results and verify them?

8 MR. SYGO: Absolutely. It's typically our  
9 plans to, what we would call -- we won't always take  
10 all the samples, but we would audit the samples and  
11 evaluate and make sure that the numbers we're seeing  
12 from whoever is doing the sampling and analysis are  
13 consistent with numbers that we're getting as well. I  
14 think, you know, Al Taylor kind of heads that up for  
15 our department in that particular -- Waste and Hazardous  
16 Materials Division.

17 AUDIENCE MEMBER: Thank you, Jim. I'd like  
18 to make one comment. I'd like to commend Midland  
19 Daily News for the editorial in the newspaper just  
20 recently on common sense on the Homeowners Fairness  
21 Act that's going through the House right now. You  
22 folks from Dow, have you read that editorial? Would  
23 you care to comment on that? Are you pleased with  
24 that editorial, or do you see some difficulty with  
25 that?

1 MR. MUSSER: Well, as you may know, we  
2 haven't taken a position on the legislation one way or  
3 the other. We have followed it.

4 AUDIENCE MEMBER: I didn't ask you that,  
5 John.

6 MR. MUSSER: I'm finishing your question  
7 here, if you'd give me an opportunity. The comment on  
8 the editorial, you know, people are allowed to have  
9 their opinions I suppose. I think the opinion  
10 expressed in the paper was a bit misguided in the  
11 sense that Dow doesn't have any control over what is  
12 and what isn't a facility under the proposed  
13 legislation or under the existing rules. So to  
14 suggest that we have any say so in what is and what  
15 isn't (a facility) is misguided.

16 AUDIENCE MEMBER: I did not make that  
17 statement, John.

18 MR. MUSSER: That's what it said in the  
19 article.

20 AUDIENCE MEMBER: All I asked was a comment  
21 on whether you favored it or not or you saw anything  
22 good about it.

23 MR. MUSSER: I think you asked me what our  
24 comment was about the article, and I gave you our  
25 comment.

1 AUDIENCE MEMBER: Thank you.

2 MR. MUSSER: You're welcome.

3 MR. NELSON: Sir, you're next. Go ahead.

4 AUDIENCE MEMBER: This is a follow up to  
5 Rick's question and the reply from Dow's chemist. I'm  
6 trying to understand your comment. As a Veteran in  
7 Vietnam, I could go have a blood test and find out if  
8 I'm exposed to Agent Orange? Did I put that in simple  
9 language?

10 MR. BUDINSKY: Well, the question about  
11 Agent Orange exposure in Vietnam is pretty  
12 complicated, but as I understand Agent Orange, it was  
13 one (dioxin) congener in particular, which was 2378-TCDD, and  
14 that was from the folks interested in Agent Orange in  
15 the Vietnam Veterans.

16 In the floodplain, we have two unique furan  
17 congeners, 2,3,7,8 TCDF and 4 Penta-dibenzofuran,  
18 and they're very unique, and especially with the 4  
19 Penta furan because that's such a long half life in  
20 people because you need distribution in the liver and  
21 the fat. It should stand out. In fact, as Lisa  
22 Williams pointed out, we did see that in the wild game  
23 study.

24 So I can't answer your question about Vietnam,  
25 but I feel pretty confident that within the floodplain



1       that the dioxin and furan congeners will give us a very unique  
2       perspective on how to look at the blood data from the  
3       U of M study.

4             MR. NELSON: Ma'am, you are next.

5             AUDIENCE MEMBER: I don't know if you can --  
6       if I can direct a very specific question, which is  
7       about our own situation, in this forum. We are one of  
8       the families that still has not had the remediation,  
9       and part of the reason is we have been out of the area  
10      for a good part of the year. We have tried to  
11      minimize our exposure on our property. We live right  
12      on the river, and the flooding is within 20 feet and  
13      less of our property, and we have levels of dioxin (and furan) on  
14      our property and in our house that are higher than the  
15      90 parts per trillion.

16            So we've been very conflicted frankly about our  
17      response to the remediation, and when the people from  
18      the -- from Peerless came to our home and asked us --  
19      presented us with a questionnaire, I don't know how  
20      other people responded, but we felt a little bit  
21      cornered because we didn't know how to respond. We  
22      simply didn't have enough information as to what would  
23      keep our home, our place, our yard, our property safe  
24      from any further exposure, and so we asked for some  
25      consultation.

1 For a long time, we did not have a response at  
2 all, and so the other day I called back, and Al Taylor  
3 was very nice from the DEQ that came to our house,  
4 along with Annette Lucas from Peerless, to sit down  
5 and analyze this, and the reason that I'm mentioning  
6 it now is because it seems like we are in a catch 22.  
7 We have asked or raised some issues which fall into  
8 the category of "other reasonable measures agreed to by  
9 residents and Dow," and today, when I called Annette  
10 Lucas, who has been very nice, and asked her the  
11 results of some of the things that we asked for, she  
12 said that Dow would have to make the decision, and I  
13 said, who is going to present it to Dow. Well, she  
14 told me her superior but she's got to discuss it with  
15 her superior.

16 So all I want to know right now or sometime is  
17 who at Dow will be making the decision as to what  
18 portion or what part of the mitigation or this IRA, or  
19 whatever the acronym is for it, who is responsible for  
20 making a decision about a requirement that we will  
21 have in our house, because dusting our house just  
22 isn't going to do it. We have -- and I don't want to  
23 get into the specifics because it's really not a  
24 public forum discussion. I just want to know so that  
25 I'm not caught -- my husband and I are not caught in

1 this catch 22 of being thrown from Peerless to Dow to  
2 the DEQ, who all have been wonderful. DEQ has been  
3 really terrific.

4 I just want to tell you that my husband and I  
5 are -- have been cornered. We feel cornered. We  
6 didn't ask for this problem. We live in a beautiful  
7 home in a -- on a beautiful site, and we've been put  
8 into a difficult situation. My husband is not well.  
9 He's had lots of treatment and cannot deal with the  
10 complexities of these issues.

11 And so I'm asking for help from someone who will  
12 either look at it with me and say, yes, we can do  
13 this; no, we reject this, so that we can go forward,  
14 and what about this deadline situation? You know, we  
15 got a letter today from Peerless saying  
16 November 15th -- if you don't do anything by  
17 November 15th, you're out of the picture. I mean --  
18 is that true? If we don't do anything by  
19 November 15th, we will not have any kind of  
20 remediation in our house?

21 MR. NELSON: Let me let these folks answer.

22 MR. MUSSER: I think I'm somewhat familiar,  
23 not on all the details here, but I do know that we've  
24 had a considerable number of discussions at different  
25 levels with you and your husband regarding your

1 property and some of the specific needs that you've  
2 identified. We are guided, I will say, by the  
3 agreement that we have with the DEQ to -- and by our  
4 license requirements, to perform and offer the list of  
5 interim actions, which I think you've seen, and then  
6 there are provisions, as you've noted and we noted in  
7 our presentation, for exceptions to that or additions  
8 to that, depending on, you know, the circumstances and  
9 how the property is used, et cetera.

10 Now I don't know where we are in the discussions,  
11 but I do know that we've attempted to try to respond  
12 to your concerns and your interests, and my impression  
13 is that we just haven't been able to agree on any of  
14 the additional measures that you're looking to  
15 receive.

16 AUDIENCE MEMBER: We just need to at this  
17 time -- I guess we just need to move forward because  
18 of these deadlines.

19 MR. MUSSER: We are obligated by our  
20 agreement with the DEQ and the Framework to have  
21 completed by the end of this year all of the Priority  
22 1 Interim Response Actions, and we're running out of time in  
23 terms of the weather. You know, when the snow flies  
24 and the ground freezes, it kind of limits your ability  
25 to get things done. So we are committed to getting

1 completion. I think the letter you received was a  
2 broadcast letter to anyone that has not yet had a  
3 completion of a project.

4 AUDIENCE MEMBER: Well, when I spoke with  
5 Annette today, she said that Dow would have to make  
6 the decision. I'm waiting for a decision so that we  
7 can proceed with whatever, and when I finished talking  
8 to her today, I just felt like I was kind of in a  
9 catch 22. I said, who is it. She said Dow has to  
10 have it. So I wasn't sure just where I was so that we  
11 could go forward with it.

12 MR. MUSSER: Why don't we -- if you would  
13 like, we can take this up a little bit further after  
14 the meeting here to allow other people to ask  
15 questions, but I think we can certainly hear you out,  
16 and if there are decisions to be made, those can be  
17 made in due time.

18 MR. TAYLOR: Just one clarification, during  
19 the site visit yesterday, AKT Peerless asked and DEQ  
20 responded if there could be an extension granted for  
21 the completion of the IRA beyond the November 15th,  
22 and the DEQ responded, yes, of course, we could grant  
23 the extension on a case specific basis.

24 MR. NELSON: Other questions?

25 AUDIENCE MEMBER: I just have a couple of

1 questions. I think it's for John or Susan.

2 MR. MUSSER: I'll be traffic cop. You throw  
3 the question and I'll decide where it goes.

4 AUDIENCE MEMBER: I don't know if anybody  
5 else asked these same questions, but what I was  
6 thinking of when you had your presentation up, it was  
7 a pretty good -- it was a pretty picture that you  
8 painted as far as the \$35 million and spending X on  
9 putting landscaping in and putting different soils.  
10 As far as how deep you went and the extent of where to  
11 was my question. What exactly is involved with that,  
12 specifically with the -- like the walkways you were  
13 talking about, do you just dig down deep enough or do  
14 you just put the woodchips right on top or where does  
15 it go to?

16 MR. MUSSER: I think the easiest way to  
17 answer that is it depends on the property and the  
18 individual assessment that our contractor AKT Peerless  
19 undertook with the homeowners, to understand the use  
20 of the property and other factors, and they made a  
21 decision about how to apply the list of things or if  
22 those were going to be applicable at all, and so in  
23 some cases, I'm sure there was soil removed and  
24 replaced. In other cases, woodchips were put over the  
25 top of the existing soils and probably things in

1       between.

2               AUDIENCE MEMBER: Now is that just an  
3       immediate bandaid, or how long do you expect that that  
4       will last? I mean, once you replace the soil with  
5       good soil, if there's bad soil around it and water  
6       seeps into the good soil, how is that a fix?

7               MR. MUSSER: Well, these are intended to be  
8       interim actions, okay. These are not final remedies.  
9       Now it may come to pass that with the Remedial  
10      Investigation that some of these actions may be deemed  
11      complete fixes. In other cases, there will be  
12      additional activity that's required in order to fully  
13      remediate the site so that there isn't an unreasonable  
14      risk to people or the environment for that matter.

15              AUDIENCE MEMBER: Okay. And just my last  
16      question, you reported about, or somebody did, I'm  
17      sure it was the DEQ had reported that they had put out  
18      fish advisories. Will there be any expected other  
19      advisories, as far as deer or turkeys or anything  
20      else, that's going to be immediately affected by this?

21              MR. MUSSER: I'll give them the same  
22      opportunity to respond to that, but as far as we know,  
23      there aren't any additional advisories anticipated at  
24      this point, and I would make note of the fact that the  
25      recent assessment that MDCH issued with regard to the

1 fisheries did improve the standing on walleye, which I  
2 believe is arguably the most highly prized dinner fish  
3 in the community, so that was good news. Everything  
4 else was pretty much as it had been, as I understand  
5 it, but I'm not expecting from our point of view that  
6 there would be any additional advisories.

7 MR. BOYLE: The wildlife advisory that we  
8 did was done on the basis of the data we had available  
9 to us. There are some wild creatures that are  
10 captured for food that were not available to us. For  
11 example, all the rabbits were gone somewhere at the  
12 time the trapping was done. So in the future, if  
13 there's data available to us and there's an advisory  
14 necessary, we'll be issuing an advisory.

15 AUDIENCE MEMBER: Just one more question for  
16 John.

17 MR. BOYLE: Well, the current advisory is  
18 already out on deer, turkey and that, but there are  
19 other animals that were not sampled.

20 AUDIENCE MEMBER: Okay. Thanks. Just one  
21 more question for John if I could. Specifically, with  
22 building floating docks and whatnot, why would you  
23 build a floating dock if you can't fish or if you  
24 don't want to eat the fish?

25 I don't understand the concept of spending \$35



1 million in order to really just have a floating dock.

2 That was my biggest question. I didn't understand  
3 that.

4 MR. MUSSER: Well, the issue with the  
5 floating dock is really one of access to the river and  
6 minimizing exposure that might be generated as a  
7 result of, you know, walking in the uncovered soils  
8 along the river bank, so now we've got a floating dock  
9 where that's no longer an issue.

10 Now the \$35 million that I spoke of is an  
11 investment that we've made. A large portion of that  
12 is invested in the independent studies that are being  
13 done by Michigan State and University of Michigan, and  
14 then, of course, the Interim Response Actions are part  
15 of that, but the bulk of the money is being spent on  
16 the independent studies.

17 AUDIENCE MEMBER: Okay. And just a  
18 suggestion for you guys in the future, I would  
19 encourage you guys to get an internet forum where  
20 people can voice their opinion and spout out about  
21 whatever they want.

22 MR. MUSSER: Sure. Actually, there is an  
23 option for that, the Michigan Operations Dioxin and  
24 Furans situation site, and I can get you the e-mail  
25 address for that, if you don't have it.

1 AUDIENCE MEMBER: I would appreciate that.

2 MR. TAYLOR: That's a great observation  
3 about building a floating dock to increase access to  
4 fishing when there's fish advisories. There are  
5 certain fish, like walleye, which are basically  
6 unlimited consumption for males I think under  
7 22 inches, but there are fish advisories for other  
8 fish that you should not eat, carp, catfish, and fish  
9 that are, quite frankly, eaten from the Tittabawassee  
10 River and on the Saginaw River that shouldn't be  
11 eaten. As part of -- people are going to fish in the  
12 Tittabawassee River and the Saginaw Rivers.

13 What these IRAs have done is they have improved  
14 fishing access at several areas, but in combination  
15 with these docks that have been put in are these signs  
16 that you see back there, the fish advisory signs, so  
17 at the entrance to these docks, and even the ones that  
18 are just completed in Freeland, will be signs that  
19 say, you know, here is the actual fish advisory for  
20 this river, so do not eat these fish, limit your  
21 consumption of these fish if you're women, children,  
22 whatever, but that's a great question.

23 It's important that the IRA component is not just  
24 prevention of soil from sitting on the bank or eating  
25 a sandwich while sitting on the bank. It's also

1 recognizing which fish are okay to eat and which fish  
2 you really shouldn't be eating.

3 MR. NELSON: Thank you. Now one more  
4 question there. Come on to the mike, and then we'll  
5 go to something else.

6 AUDIENCE MEMBER: Just two questions about  
7 the bioavailability presentation earlier. The first,  
8 in the summary, you listed a number of studies, and I  
9 think the last one was the bioavailability study by  
10 the University of Missouri, and then you went into  
11 more detail about that study. Is that one in the same  
12 or are they two different studies?

13 MR. MUSSER: There were two studies that I  
14 referred to. One was the test tube study, which was  
15 done by Dow, and the University of Missouri conducted  
16 the initial pilot study -- pilot bioavailability study  
17 with the rats and the swine. Those are the two  
18 studies that I talked about.

19 AUDIENCE MEMBER: Thank you.

20 MR. MUSSER: And then there was a follow up  
21 study to the pilot study, which a protocol has been  
22 developed for that.

23 AUDIENCE MEMBER: Right. And then you  
24 mentioned something about an anomaly between the rat  
25 and the swine, and I was just wondering if you could

1 give us a brief -- what was the big deal? Lesa Aylward  
2 will handle that question for me.

3 MS. AYLWARD: Hi, I'm Lisa Aylward. I'm from  
4 Exponent. We're working to supervise -- to help  
5 design and supervise the bioavailability studies. The  
6 anomaly that we observed was -- when we went into the  
7 study, the peer review panel had expected and  
8 commented in review of the study designs that they  
9 wouldn't expect much difference between rats and swine  
10 in terms of the bioavailability that you'd get out of  
11 it, and the choice between the two would have to do  
12 with things like which model do we understand better,  
13 which ones are easier to use. The whole purpose of  
14 this pilot study was to sort of make sure we had a  
15 method that would work, so we used both species.

16 When the results came out, the first analysis of  
17 the data seemed to show radically different  
18 bioavailability for some of the Furan congeners  
19 between the rats and the swine, and from a variety of  
20 chemical physical characteristics, we really didn't  
21 think that was very reasonable, and as we went further  
22 in the data, some of the biochemical measurements that  
23 we took seemed to indicate that in our rat models,  
24 some of the basic assumptions of the calculations were  
25 being violated, which would have made the rat

1 calculations perhaps not correct.

2 So we're going to go back and redo the rat

3 portion, taking this biochemical issue into account

4 and readjust the study design, so these differences

5 that we saw shouldn't occur, and then re-estimate the

6 bioavailability from the rats based on that, and if

7 that still shows a difference, then we have something

8 we don't know how to explain and it's surprising and

9 we have to figure out what's the best model to go

10 forward with. If it changes the results and makes the

11 rat and swine look more alike, then we think now we

12 understand this process and we understand why we had

13 this difference and we know what method we should use

14 to go forward. So that's where we're at.

15 MR. NELSON: Okay. One thing that I'd like

16 to be sure we do before we leave tonight is we want to

17 be sure we ask you folks about what are future agenda

18 items for the next meeting, which is in February. So

19 if there are items or things you would like

20 information on, such as the NRDA presentation which we

21 had tonight which outlined I think very clearly and

22 succinctly how that process works, if there are other

23 things like that.

24 We know we have some things coming up on a

25 timeline that we will be getting information to you,

1 but do you have specific information requests types of  
2 presentations you are looking for. So if you do,  
3 please, come to a mike and talk to us, and we'll be  
4 sure to get those in the minutes.

5 AUDIENCE MEMBER: I would just guess I would  
6 like to see all of that data that's out there right  
7 now that hasn't been reported that Dow has collected,  
8 that DEQ has collected on the Saginaw River in  
9 particular, and I would like to know what the plans  
10 are for further characterization along the  
11 Tittabawassee River.

12 MR. NELSON: Okay. Any other requests?

13 AUDIENCE MEMBER: I think we would like to  
14 see some exploration of the remediation strategies. I  
15 know it's early, but we seem to be spending a  
16 considerable amount of money with studies showing or  
17 attempting to show whether there is uptake of this  
18 material, but we don't seem to be spending a whole lot  
19 of time exploring strategies to remove the material,  
20 and I was wondering if that's a possible. I know it's  
21 early in the process, but I think that there are some  
22 very promising studies out there we should be  
23 exploring.

24 MR. NELSON: Okay. Any other comments or  
25 requests?

1           AUDIENCE MEMBER: I just have a comment. I  
2       guess I don't really understand why they're doing all  
3       these different animal studies when we already know  
4       that the soil is being taken up and the animals living  
5       on the floodplain, the deer and the turkey and the  
6       squirrel, I mean, they're taking it up. So why are we  
7       doing all of these extra studies?

8           MR. MUSSER: Well, let me just say that  
9       there are a lot of data gaps that we don't have data  
10      for at this point. In order to develop a solution  
11      that really is protective of human health and the  
12      environment and for people's well being in the  
13      communities, we've got to have that data in order to  
14      make those decisions and to make the bucks that are  
15      going to go towards this count. So you know, you're  
16      talking about a very limited amount of sampling that's  
17      been done with respect to wild game in the floodplain,  
18      and even then, I don't think it's reasonable to  
19      extrapolate even that data at any level to what may be  
20      the situation with regard to humans.

21         So we need to have human data, and I think we've  
22         got some of that. We've got a very extensive  
23         independent study being done by Michigan State  
24         University to look at the ecology of all sorts of  
25         critters that are in the floodplain, and extensive

1 resources are going into getting answers to these  
2 questions. So I think it's an appropriate manner that  
3 is being addressed.

4 AUDIENCE MEMBER: Okay. It just seems to me  
5 that -- I just wondered is that not enough of a  
6 critical thing that the wildlife are all contaminated  
7 and poisoned that that's not driving criteria enough  
8 to clean it up? I mean, you need to -- I don't know,  
9 you're trying to find -- I don't know what you're  
10 trying to find, but I guess I'm having a hard time  
11 stating this. If it's in the wildlife and they're  
12 picking it up, is that not reason enough alone to  
13 clean it up, you know? Let alone the fish, we've  
14 known about the fish for a long time. That's not  
15 enough?

16 MR. MUSSER: Not to be flip, but the answer  
17 is, no, we don't think that there is enough data to be  
18 able to decide what is the right action to take, where  
19 and how much of it even. So we've got unknowns here  
20 that just need to be dealt with before we can make  
21 those kinds of judgments.

22 MS. CARRINGTON: And let me just add to what  
23 John said, we all have dioxins and furans in our  
24 bloodstream from the national food supply. To answer  
25 your question, yes, we do find it in the animals. I



1 think some of the data -- independent data MSU has  
2 shared with all parties indicate that they find it in  
3 other animals, but it's not just whether it's in the  
4 human or the animal but is it having an effect, and  
5 part of what MSU is trying to do, as I understand it,  
6 is to really look at the populations -- the health of  
7 the populations, and it's been very encouraging to me  
8 and many of us that they are finding a lot of thriving  
9 populations, but as Lisa Williams pointed out, there's  
10 a lot more work to be done and understood and no  
11 conclusions to be drawn.

12 And I would just bridge to say that, you know,  
13 we've been committed to getting those answers that the  
14 community asked us to get regarding human exposure and  
15 the ecology earlier on, but while the studies go on to  
16 get those answers, we've remained committed to  
17 getting -- taking actions, which includes complying  
18 with our operating license, proceeding with the  
19 corrective action process and taking the interim  
20 actions to interrupt potential exposure pathways.

21 AUDIENCE MEMBER: Excuse me, but no matter  
22 what the effects might be on those animals, the fact  
23 that they're telling us it's not safe for us to eat  
24 them, I mean, that in itself to me would say there's  
25 something wrong here and you need to resolve it and

1 clean it up, because it's not safe for us to eat this  
2 food because of the river, regardless of what it's  
3 actually doing to those animals that's in the food  
4 chain.

5 MR. NELSON: Your comments are noted. Thank  
6 you. Now we're at the absolute five minutes after  
7 9:00 right now. So I'd like to wrap this up in the  
8 next five minutes. So, sir, go ahead.

9 AUDIENCE MEMBER: This won't be long. I  
10 would prefer not to hear anymore speeches from Dow  
11 Chemical. I'd like to get a question from -- as far  
12 as the \$35 million, that's -- based on Dow's last  
13 quarterly report, that's about three days of profits  
14 for them, so that's nothing. That's what they spend  
15 on cookies basically, let alone lawyers. You want to  
16 tell us how much you spent on lawyers in the last  
17 three months or the last three years stalling this  
18 procedure?

19 I'd like -- I think I heard a clue about what  
20 might be the one I'm -- with the bioavailability study  
21 about a half an hour ago, because somebody said that  
22 Dow's congeners show up in fat samples in liver tissue  
23 but the bioavailability study is not going to look in  
24 fat tissue or liver samples. It's going to be looking  
25 in the blood. Maybe that's why Dow is supporting that

1 study because it's not going to show their congeners.  
2 It's going to show somebody else's, like the food  
3 supply. Could I get any comment from somebody from  
4 DEQ or another agency -- health agency, community  
5 health about the congeners?

6 MR. SYGO: Why don't we give you to a  
7 toxicologist?

8 MS. TAYLOR: The bioavailability study that  
9 Dow --

10 AUDIENCE MEMBER: I don't want to hear about  
11 the bioavailability study.

12 MS. TAYLOR: I'm sorry, the pilot studies  
13 are looking at liver and fat in the rats and the  
14 swine, so that's where they are looking for the  
15 dioxins (and furans).

16 AUDIENCE MEMBER: But Dow took blood  
17 samples -- Dow's scientists took blood samples not  
18 from fat tissue or liver samples.

19 MS. TAYLOR: For their occupational study?

20 AUDIENCE MEMBER: No, for their \$15 million  
21 study.

22 MS. TAYLOR: The U of M blood study?

23 AUDIENCE MEMBER: Yes. That's blood  
24 samples, so it's bull----. It's no connection.

25 MR. NELSON: Okay. I want to finish up with

1     noting that in your handout from the DEQ that the  
2     absolute last slide on page 13 says, if you have  
3     written comments or questions, please, send them to  
4     Cheryl Howe. Cheryl is a wonderful person. She  
5     listens to everybody, even me, and she does a great  
6     job, so be certain that you follow up with Cheryl,  
7     because I know some of you may not have gotten a  
8     chance or this isn't the right format for you. Please  
9     be sure to comment. Thank you very much for  
10    attending. I appreciate it. Look forward to seeing  
11    you in February.

12           (Proceedings concluded at 9:13 p.m.)

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1 STATE OF MICHIGAN)  
2 )  
3 COUNTY OF SAGINAW)

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7 I certify that this transcript, consisting of 109  
8 pages, is a complete, true, and correct transcript of  
9 the proceedings and testimony taken in this case on  
10 November 9, 2005.

11

12 I also certify that I am not a relative or  
13 employee of or an attorney for a party; or a relative  
14 or employee of an attorney for a party; or financially  
15 interested in the action.

16

17 November 17, 2005

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\_\_\_\_\_  
Natalie A. Gilbert, CSR-4607, RPR

19

Notary Public, Saginaw County, MI

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My Commission Expires: 8-10-06

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